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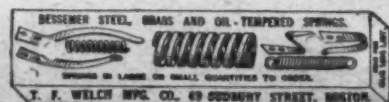
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THE IRON AGE

THURSDAY, MARCH 27, 1902

The Woods Automatic Hollow Chisel Mortiser.

The S. A. Woods Machine Company of South Boston, Mass., have designed a vertical automatic hollow chisel mortiser, possessing many unusual features and advantages. Those familiar with wood working machinery are aware of the fact that the hollow chisel mortiser, in addition to being faster than the old type machines, will do much better work.

The first characteristics we shall consider are the lay out stops for laying out mortises, and which are indicated by the diagrammatic sketch, Fig. 5. The tim-

ber placed on the table is to be deeply mortised, and the mortises are located in the following manner: Stops 1, 2, 3 and 4 are set the desired distance apart on the rod 5, and after each downward stroke of the chisel the table is moved along until the trip H is struck by one of these stops. In this manner the mortises between A and B are reached. After these mortises have been made the trip H is thrown back and the table moved along until the trip may be thrown between the stops 3 and 4, when the device is ready for the next set of mortises, and so on. The distances between the points E and F are similarly located by adjusting the stops on a rod which is attached to the chisel carriage bolted to the frame, as indicated in the enlarged view of the head, Fig. 3. These stops really control the cross movement of the chisel carriage, and in this way the distances between

the points E and F are obtained without further measurements.

The table is operated laterally by the hand wheel Z, Fig. 5, at the other end of which is attached a cog wheel which runs in a rack in the table. This system of lay out stops is provided so that when several end pieces of timber are to be deeply mortised, as indicated in the sketch, and such as is common in railroad and like shops, the work may be accomplished without measuring or laying out each piece, a chalk mark on the table being sufficient to locate the timber, after which the stops working in connection with the trip will accomplish the results.

In Fig. 3 is also shown a new device for instantly

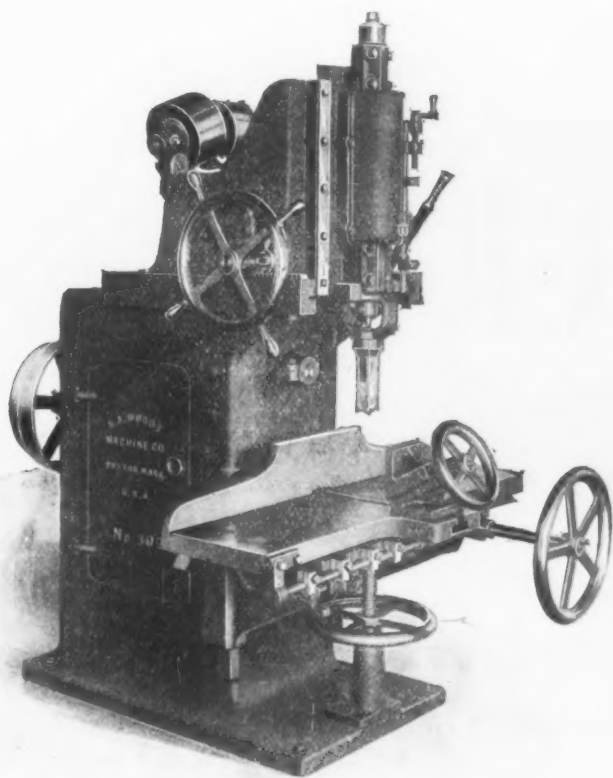


Fig. 1.—Front.

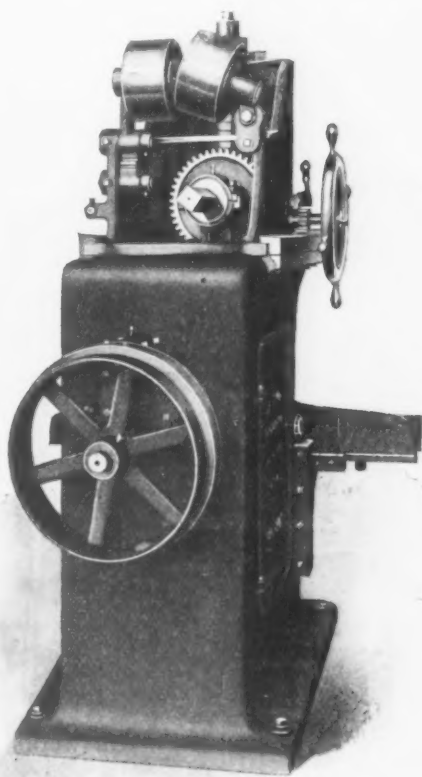


Fig. 2.—Rear.

THE WOODS AUTOMATIC HOLLOW CHISEL MORTISER.

ber placed on the table is to be deeply mortised, and the mortises are located in the following manner: Stops 1, 2, 3 and 4 are set the desired distance apart on the rod 5, and after each downward stroke of the chisel the table is moved along until the trip H is struck by one of these stops. In this manner the mortises between A and B are reached. After these mortises have been made the trip H is thrown back and the table moved along until the trip may be thrown between the stops 3 and 4, when the device is ready for the next set of mortises, and so on. The distances between the points E and F are similarly located by adjusting the stops on a rod which is attached to the chisel carriage bolted to the frame, as indicated in the enlarged view of the head, Fig. 3. These stops really control the cross movement of the chisel carriage, and in this way the distances between

changing the depth of the mortise. While this feature is valuable, it could in reality be done away with, inasmuch as the same result could be obtained by raising and lowering the table by the hand wheel shown beneath it in the first illustration. The machine is also provided with an automatic belt tightener, which consists of an idler pulley so arranged as to be operated by an adjustable weight and to be always kept against the belt, which in this way remains under a uniform tension.

The machine is provided with an improved friction feed, with quick return and two rates. The two rates are obtained from a cone stop pulley, Fig. 2. The friction feed is operated by the lever shown in Fig. 3, which is attached to a trip which is thrown by stops on a rod actuated by the ram when the desired depth of mortise

has been reached. The construction of the bearing for taking up the end thrust of the spindle will be clearly understood from Fig. 4.

The following are the general dimensions of the machine: The chisel ram has a vertical travel of 9½ inches; the carriage has a horizontal travel of 11 inches across the timber; the table has a longitudinal movement of 18 inches and will mortise stock 17 inches high. Timber up to 12 inches may be clamped, and chisels up to 1½ inches can be used on hard wood.

The Department of Commerce and Labor.

WASHINGTON, D. C., March 25, 1902.—The House Committee on Interstate and Foreign Commerce has decided to give a series of hearings, beginning this week, on the bill establishing a Department of Commerce and Labor.

cials of several departments, concerning the proposed detachment and reassembling of Governmental bureaus, and special interest centers upon the probable attitude of the Secretary of State as to the functions of the United States consuls with reference to the new department. The correspondent of *The Iron Age* is reliably informed that the views of Secretary Hay were reflected during the debate in the Senate in the amendment offered by Senator Lodge, which was accepted, and under which the consular reports on whatever subject whether diplomatic or commercial, will be forwarded direct to the Secretary of State and separated by State Department officials, all matter relating to commercial affairs being promptly transmitted to the Department of Commerce.

The practicability of this plan cannot be questioned for the reason that in a modified form it has been in daily use in the department for a number of years. Under standing regulations all commercial reports relating to agricultural matters are now promptly separated from

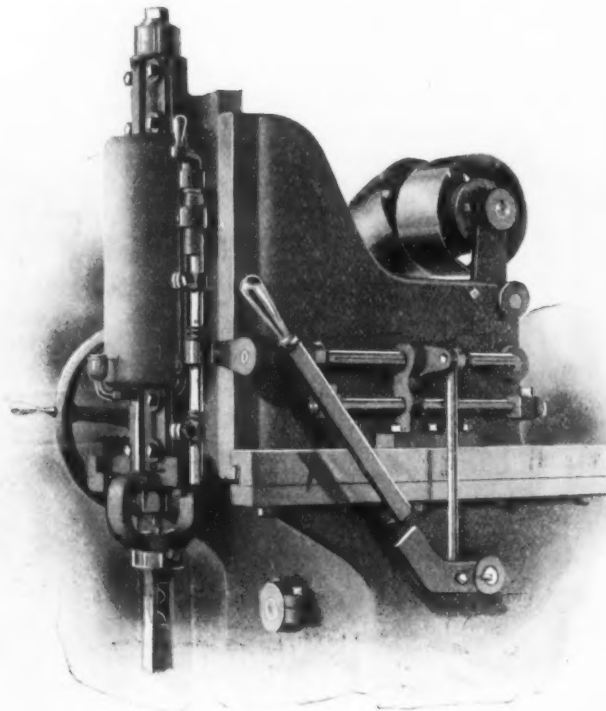


Fig. 3.—Enlarged View of Head.

THE WOODS AUTOMATIC HOLLOW CHISEL MORTISER.

This measure, which was originally drafted by Senator Nelson of Minnesota, recently passed the Senate by a large majority, and its advocates believe it will be favorably reported and put through the House before the end of the present session. The purpose of the hearings to be held by the committee is to enable all interests affected by the proposed measure to appear and present arguments either for or against the bill as a whole, or in advocacy of desired amendments. The committee already has assurances that representatives of numerous commercial organizations throughout the country will urge a prompt and favorable report upon the bill, and the communications received from these sources leave no doubt as to where the business community stands on the measure. The great desirability of gathering under one head the numerous Governmental bureaus now inappropriately attached to the several departments, or in some cases maintaining semi-independent organizations, is very generally recognized, and the memorials and other communications that have reached the committee express but one view on this point.

Consular Reports.

Among those who will be heard by the committee, either orally or by letter, will be a number of high offi-

the general mass, copied and forwarded to the Secretary of Agriculture. Similarly, all reports dealing with South and Central American affairs of a commercial character are copied and turned over to the Bureau of American Republics. Under the Lodge amendment, calls upon consuls for special reports or current information will be prepared in the new department and forwarded through the Secretary of State. In this way the efficiency of consuls as agents for the advance of American commerce will be greatly increased without detracting from their usefulness in connection with diplomatic affairs, for while they will still be under the general supervision of the State Department, they will receive many suggestions along commercial lines, which will be the outgrowth of the development of the new department devoted exclusively to the extension of American commerce.

A feature of the coming hearings that is the logical sequence of the unsatisfactory compromise made in the Senate concerning the title of the new department, which is to be known as the Department of Commerce and Labor, is already foreshadowed in a series of protests which have been filed with the House Committee by representatives of labor organizations. The word "Labor" was added to the title of the bill to placate

this particular element, which for some time has had bills pending in Congress providing for a special Executive Department to be devoted exclusively to labor interests. Since the passage of the Senate bill, the labor

pendent status. The incident illustrates graphically the absurdity of the effort to differentiate the interests of labor from those of commerce.

Senator Nelson expresses great confidence that the House will pass the measure in a fairly satisfactory form, and that all incongruities that may creep into it will be subsequently eliminated in Conference Committee.

W. L. C.

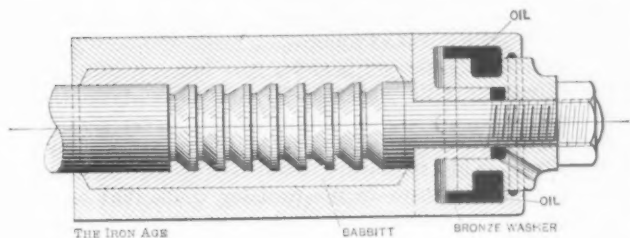


Fig. 4.—Thrust Bearing.

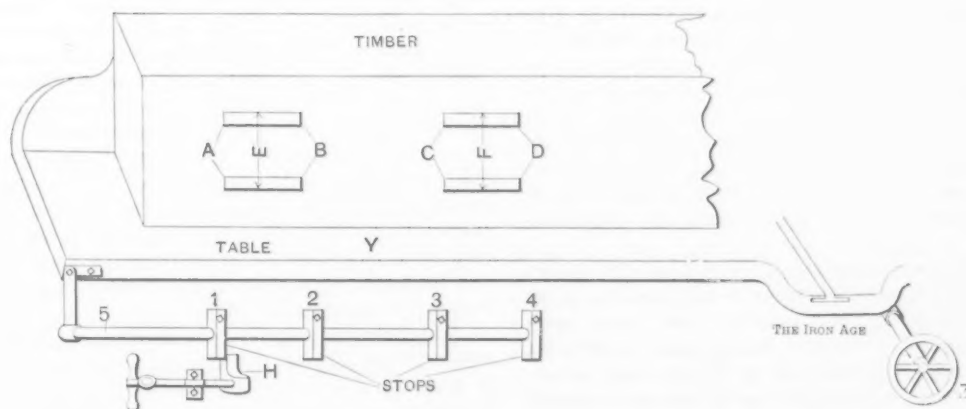


Fig. 5.—Lay Out Stops.

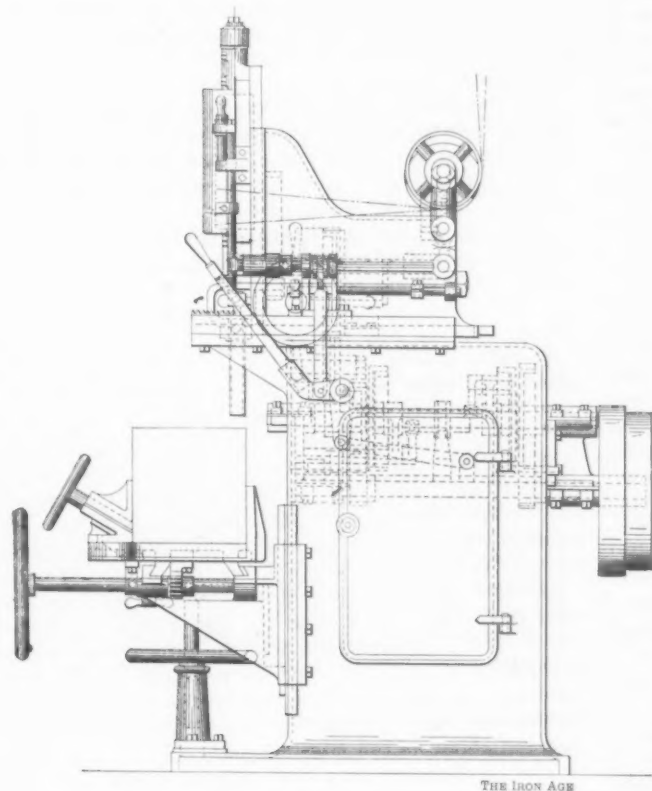


Fig. 6.

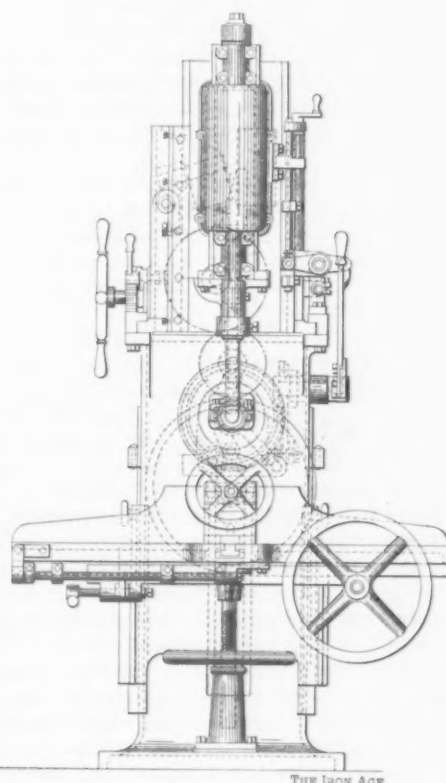


Fig. 7.

Sectional Elevations.

THE WOODS AUTOMATIC HOLLOW CHISEL MORTISER.

leaders have decided that if the measure goes through in its present form all hope of an independent department is at an end, and therefore they have memorialized the committee to strike out the word "Labor" in the title and to restore the Bureau of Labor to its present inde-

rectors, buying 2000 shares of Terni stock at current prices as a guarantee during the life of ten years of the syndicate. Since the Terni Board of Directors cannot deliver the 2000 shares a meeting of the stockholders is to be called to authorize the issue of new stock.

Foundry Economy.*

BY DR. RICHARD MOLDENKE, NEW YORK.

The rapidity with which the buying of pig iron on chemical specification has spread among the foundries of this country is perhaps the best evidence of the value of a rational method of procedure. Where at first the broker declined to sell iron under this arrangement, or exacted an extra 50 cents per ton (one furnace even thinking a guaranteed analysis worth \$2 a ton above the market price), to-day the makers of foundry pig iron are almost altogether relieved from the annoying "fracture correspondence." That this revolution in practice has been no easy thing to accomplish may readily be imagined, and even to-day the majority of founders feel a little shy of irons with the proper composition which do not show the accustomed fracture.

With the selling prices of castings finding lower levels at every period of depression, the founder naturally asks himself: "How will I keep my margin of profit unchanged? I have been as economical as possible in every way, and yet other founders, whose tonnage is no larger, are quoting lower figures and seem to be making money." The solution is not so simple, and will be found based on a good cost system in the office and scientific methods applied where needed in the shop. Just how the foundryman is to go about this work will form the substance of this paper.

Were it simply a question of employing an expert the foundry doing a large business would soon be going in the right direction, but experts who have been through the changes of the last decade and know what is wanted are scarce. Technical graduates and others who can carry out the scientific manipulations required in a laboratory must be given a few years to acquire practical foundry experience before they become valuable. The owner of a small foundry, therefore, finds it difficult to take advantage of those economies which great institutions have developed after years of pioneer work in their respective lines. The founder must do a little studying himself of cause and effect in his foundry. He must so systematize his operations that should he not have a metallurgist on his staff he need call in one only on occasion of troubles which require quick adjustment.

The most important consideration is naturally the daily product. This must be kept up to standard, and at the same time be as low in cost as possible. Here is where the cost accounts come in. One must know the cost per pound of the good castings sold for every department in the establishment. Thus, if the cost of core making runs, say, 0.25 cent per pound in one month, and it creeps up gradually to 0.35 cent in the course of the next three, it is time to see if the knife cannot be applied effectively, or, failing this, to rearrange or place new machinery to get the work out to better advantage. On the whole it will pay to do the latter anyhow, for until the monthly figures are brought down to a point where there will be only a fluctuation of a few points the department cannot be said to be in proper working order. Be it understood that this refers to a fairly uniform run of work. The principle involved, however, is a truly scientific one and should be applied in every manufacturing establishment.

The molding machine question will be found the most important one so far as the foundry pay roll is concerned. A well managed pattern shop and pattern storage system are also money-savers. If the founder is personally systematic in his work he will not tolerate slipshod habits in his employees; if he is not inclined that way it were better for him to get an associate who is systematic. Then should come the establishment of systems of working marked by extreme simplicity and carried through with an iron hand, the head of the establishment setting the example.

Piling Pig Iron.

The iron itself will naturally give the founder food for continuous thought, as it is a constantly changing

factor. To effect the greatest saving in the cupola room one must know what is there, what to buy and how the material is handled. Take first the pig irons. They will either be piled up by carloads or stacked together by brands and with grade numbers. Thus we will see a separate pile for Low Moor No. 2 soft, Sloss No. 2 plain, Isabella No. 1 X, Pioneer No. 4 and the softeners.

To-day the progressive foundry also has a number of piles. They are still separated by brands as formerly, this serving the purpose of locating any undesirable qualities shown by castings of an otherwise satisfactory composition. This statement requires further explanation. It is well known in the foundry trade that some irons are stronger than others, even where an analysis shows them to be of an identical chemical composition. This difference is most noticeable in irons of the lower silicon ranges, and in the case of charcoal and coke irons of the same cross section. Among the charcoal irons we find that a cold blast metal is stronger than one made with warm blast, even if the former has more impurities. I have always contended that this lay in the manner of running the blast furnace, in so far as it affects the oxidation of the resulting pig iron. A furnace which charges pure stock and runs normal should make strong iron. The forcing of the operation, however, coupled with the addition of quantities of mill cinder and salamanders of burnt iron, which can have no chance for proper reduction before they are melted and in the bottom, can only yield an inferior product for remelting in the foundry, no matter how valuable it may be in the making of open hearth steel.

Since we are not yet able to trace the degree of oxidation of an iron by chemical means with any certainty, it must be looked for in another way. The American Foundrymen's Association, which through its active members has done so much to bring about the adoption of rational methods of buying and using foundry iron, will, it is hoped, in the near future develop the best methods of judging strong and weak pig irons of given compositions, so that the founder may prove to his own satisfaction whether he is getting the proper returns for his money.

As was stated above, by keeping the brands of iron distinct inferior varieties are soon located by cutting out the suspected ones from the mixture and noting results.

The piles are now arranged according to their silicon contents, due regard being paid to the other constituents as a matter of course. Thus in a jobbing foundry, with sulphur and phosphorus normal in a given line of shipments, there would be one pile for 1.75 per cent. silicon, one for 2 per cent., another for 2.25 per cent., and, finally, one for 2.50 per cent., or four piles. If there were three brands kept in stock in all the varieties the number of piles would be 12. If experience indicated poor results with the low silicon ranges of any particular iron, these would be omitted in making the next contract. For light work there would be extra piles of 2.75 per cent., 3 per cent. and even 3.25 per cent. silicon, and special piles also for high phosphorus metals. Occasional bargains in high sulphur pig irons suitable for floor plates would also come in for this method of piling.

A letter of the alphabet painted conspicuously on each pile, and a stock book for continuous record, will give the foundry superintendent the information wanted at a glance when making out his requisitions. This also conceals the identity of the iron so far as unauthorized persons are concerned; all the more so if the letters are changed about as the piles run out.

The ferrosilicons and silico-spiegels being only used in small quantities, and that only in emergencies, usually find a convenient resting place a little out of the way of the stock irons.

Scrap.

The scrap heap will form the next consideration. Two general classes must be reckoned with—that which we make and that which we buy or take in exchange for good castings. As will be shown later, it is necessary for the founder to know almost daily how his product is coming out in order that he may keep his mixtures in proper shape. This information, consisting

* A paper read before the Foundrymen's Association.

practically only of the silicon and occasionally the sulphur in the castings made, also answers for the domestic scrap. It is also possible to keep the low phosphorus scrap for low phosphorus mixtures.

With the bought, or, as we call it, "foreign," scrap things are a little different. As it is manifestly impossible to attempt a reliable sampling of this material in order to find out what it contains, we must do a little guessing on this point, and then use no more than the mixture can safely stand without upsetting our calculations. Fortunately certain lines of castings require irons of a pretty generally understood composition. A piece of stove plate scrap, whether of recent date or made 50 years ago, may be safely counted on as containing 2.75 per cent. silicon and 1 per cent. phosphorus. Ordinary machinery scrap is never far from 2 per cent. silicon, with phosphorus and sulphur normal. Heavy machinery may be classed as 1.75 per cent. silicon, and if it should contain more so much the better. Scrap rolls, plates, car wheels, malleable scrap, in fact everything out of the ordinary line of foundry work, should not be used in quantity unless an expert is at hand to see that it is properly cared for in the mixture.

The founder, then, who wishes to make up his mixtures from day to day by more accurate methods than the cut and try will first settle upon the proportion of pig iron and scrap the necessities of the case compel him to use. He must take care of his own scrap in the first instance, and then look over the market prices of pig iron and scrap for the rest of his mixture; always remembering that the class of work he makes must not be injured by too great a cheapening of his melt. Cases may occur in which no foreign scrap is admissible at all, and your own and a lot of steel in addition will only just let you out on the specifications. Unless you are running a sash weight factory 60 per cent. of scrap, your own included, is about all you can safely stand; 25 to 40 per cent. is a good average. It was my misfortune, through delays in shipment, to be left without any pig iron of the kinds I could use in the yard for the period of four days, and 50 tons of castings had to be delivered daily under contract. A mixture consisting of 97 per cent. scrap, most of it foreign, and 3 per cent. silico-spiegel, containing 24 per cent. manganese and 18 per cent. silicon, answered all the requirements of the case and nearly cleaned out the scrap pile. This is quoted, not as an example to follow, but merely to show that a little science was a handy thing around the foundry just then.

Mixture Calculation.

For the purposes of the mixture calculation, suppose you prefer 70 per cent. of pig iron, 15 per cent. of your own scrap and 15 per cent. of foreign scrap. The size of the charge which experience has shown to be the most economical with your cupola is 5000 pounds. You may use five charges one day and seven another. Of this 5000 pounds 3500 pounds will be pig iron, 750 pounds your own scrap and 750 pounds foreign scrap. Experience has further taught you that the class of castings you make should average 2.10 per cent. in silicon. This means 2.35 per cent. in the mixture, as about 0.25 per cent. is burned out. Your scrap running 2.10 per cent. silicon and the foreign 2 per cent., we have the following:

Domestic scrap—750 pounds. Silicon 2.10 per cent. gives total silicon 15.7 pounds.
Foreign scrap—750 pounds. Silicon 2 per cent. gives total silicon 15 pounds.

or 30.7 pounds of silicon of the 5000 times 2.35 per cent., or 117.5 pounds silicon wanted in the charge. This leaves 86.8 pounds to be furnished by the 3500 pounds of pig iron to be used. Now in buying pig iron it is always best to get the stock so proportioned that the greatest quantity on hand is that used to counterbalance the scrap put in. In the case under discussion, which is really that of the ordinary jobbing foundry, irons running 2.50 per cent. in silicon are the ones required in greatest quantity, only smaller stocks of 2, 2.25 and 2.75 per cent. being necessary. Let us therefore take 2000 pounds of, say, Sloss with 2.50 per cent. silicon. This means 50 pounds of the 86.8 accounted for; 1500

pounds must now furnish the remaining 36.8 pounds silicon or the iron would have to run 2.40 per cent. silicon. As we do not have this in the yard, we can either reduce the Sloss a little and make up with iron running 2.75 per cent. from the stock or we may split up the remaining 1500 pounds into 1000 pounds at 2.75 per cent. and 500 pounds at 2.25 per cent. silicon from the yard. Doing the latter, as it gives us three brands of iron in the mixture instead of two, we have:

| | | | |
|----------------|-----------|------------|----------------------------------|
| Domestic scrap | —750 lbs. | at 2.10 % | silicon gives 15.7 lbs. silicon. |
| Foreign scrap | —750 " | at 2.00 % | " " 15.0 " " |
| Sloss | —2,000 " | at 2.50 % | " " 50.0 " " |
| Low Moor | —1,000 " | at 2.75 % | " " 27.5 " " |
| Mabel | —500 " | at 2.25 % | " " 6.2 " " |
| | | 5,000 lbs. | with 114.4 lbs. silicon. |

The mixture would therefore have 2.28 per cent., which is near enough to 2.35 per cent. to pass. It is probably the simplest way to get it out. You can calculate it in your office in a few minutes, and be certain that the castings will come out right if the mixture is properly handled and your materials are good.

Now what is needed to make this work on mixture making successful? Simply a knowledge of what is in your pig iron and what is in your own scrap. Even this can be narrowed down to the silicon in both items for the daily run of work. I will go even further and say that two or three determinations of silicon a week, together with stocks of irons, well sampled and analyzed as they are bought, and an occasional sulphur determination of your coke, is all that the jobbing or stove founder requires. I know cases where this work amounts to less than \$6 a week, or not even the wages of a laborer. I feel quite certain that many a young chemist would be glad to locate in a foundry center if he can get that much from three or four foundries to begin with.

The above is naturally based upon the supposition that you, your sons or your managers will do the thinking, the chemist only the manual work. Where you have enough thinking to do in this line to afford a good man in your works, get him, and your foundry foreman will thank you for relieving him from the responsibility and sleepless nights occasioned him by the changing of irons.

The application of rational methods in a foundry must be systematic to bring about the desired economy. It will not do to get an analysis of a chip of iron, pay \$10 for it, and expect that your mixture will cost you 2-10 cent per pound less laid on the charging platform. I read of a man recently who did this and then asked the foundry world at large what to do with his \$10 analysis—his gold brick. If he quietly sits down and thinks over what has been outlined above he will see the necessity for going at the problem slowly, carefully, and, once the idea is absorbed, working it out systematically. He will then wonder at the extreme simplicity of science applied in every day foundry practice.

The Cupola House.

Now comes an altogether different line of economy. How about your cupola house? Is your cupola tender really a man who will take pains with his work, or does he make a mystery of his job, keep the foreman at a distance, want only such and such irons, and go home when told to distribute his charges better? Have you still men with you who shovel in the material in a general mixture without separating into charges? I saw this done the other day and wondered what the castings would be like. Go among the molders a little and get their views on the iron tapped out, and ten chances to one you will find the troubles coming from the charging platform. I had a cupola tender one day put on his coat and go home during a heat, telling the men he would be sent for in the morning. I asked an intelligent laborer to jump in and better his prospects in life. My foreman and I stayed with him until he became proficient, according to our standard of measurement. The result was better iron, no chances taken with the cupola and the charges, and the latter weighed correctly. To-day that laborer is getting \$3 a day. The moral is: Go up and watch your men weigh out and charge, watch them daub cupola and ladles, make bottom, and see if things are done with precision and judgment. Here is a

one side of the bloom to form the leg to which to weld the back. The lower boss or rudder pintle is usually forged solid, and forms part of the original shoe forging, as shown in Fig. 2.

The back of the frame is prepared in the following manner: As the forging comes from the large steam hammer, where the heavy work is done, it has the appearance shown in Fig. 3. The swells or lumps left are 2 or 3 inches higher than the finished part of the back. These lumps are heated with lump down in the fire so as to heat only the front side of the piece and keep the back cold, so that a fuller bar held on the lumps will spread them out and thicken up the metal in the body of the piece in order to have stock enough to weld the pintles on. The back now has the appearance shown in Fig. 4.

In the meantime the bosses or lugs have been prepared under the hammer in pieces, as shown in Fig. 5. These pieces are to be taken one at a time and grasped

between two grates so that while the metal receives the heat it is kept out of the dirt of the fire.

The two pieces are kept together with harness which consists of chains and turn buckles. The turn buckles are screwed up very tight, so that the expansion by the heat, together with the small extra length which has to be allowed for the purpose, assisted by the vigorous application of a heavy ram to the end of the back, makes a perfect weld in the fire without removing the piece. After dressing up the heat with a flatter and lining up with squares and straight edges, the work is sent to the machine shops, where, if the smith has performed his work well, the holes are bored in the pintles and the frame is sent to the ship, where, together with the rudder frame, which is built on the same principles, it will look something like Fig. 7.

The Dodge Mfg. Company, Mishawaka, Ind., have recently turned out an interesting piece of foundry work,

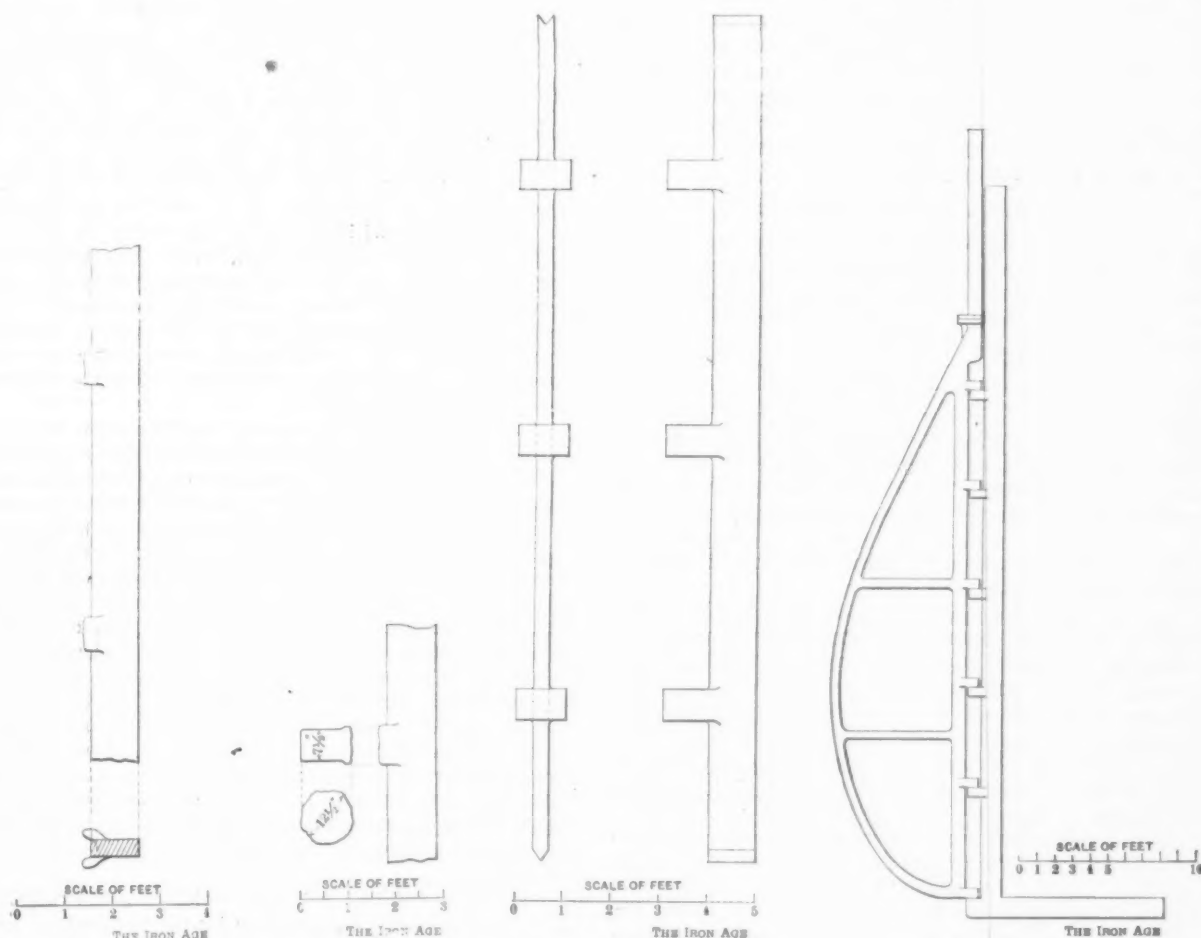


Fig. 4.—Back of Frame.

Fig. 5.—Bosses or Lugs.

Fig. 6.—Back Ready for Shoe.

Fig. 7.—Finished Stern Frame.

BUILDING A STERN FRAME.

at the top by tongs made especially for the purpose and heated end down in the fire.

One of the scarfs on the back is heated face down, and when the boss and scarf are both at a high welding heat the back is turned over, swung under the steam hammer, and the boss is carried and placed into the scarf, care being taken to brush out any coal or dirt that may cling to the pieces. A few lusty blows from the hammer drive both together, making a sound union if the work is properly done. The piece is turned on its sides, and the laps welded with sledges and fullers, the large size of the work holding the heat for some little time.

After all the bosses have been welded to the back, the end is scarfed with a V-scarf to match the one in the shoe, which has been sent to the machine shop in the meantime to be trimmed up. The back now has the appearance shown in Fig. 6.

The shoe and back are then assembled together in a portable furnace, built to burn coke, the hearth being

consisting of a very large pulley to be used on an engine shaft by the Kokomo Steel & Wire Company, Kokomo, Ind. This pulley will be used for transmitting 4000 horse-power to the rod mill. This is the largest wheel of the kind ever made by the company, is the largest ever turned out in Indiana and is one of the largest ever made in the country. The pulley was cast and finished without pattern or flask. It is 24 feet in diameter, has a 90-inch face and a 27-inch bore. When finished it will weigh 170,000 pounds. Two casts were made to get the full wheel with the required face. The wheel pit in which the pulley was cast has a 28-foot diameter, with a depth of 5 feet. The time recorded in making the cores was 560 hours. The molding time of the two molders was 30 days each, and the time for two molders' helpers was also 30 days each. The time of four helpers for digging the pulley out of the pit was 10 days each. The casting and finishing of the wheel were entirely successful.

The Reciprocity Treaties.

Hearings Before the Senate Foreign Relations Committee.

WASHINGTON, D. C., March 18.—A decision has been reached by the Foreign Relations Committee of the Senate to report at an early date, either favorably or adversely, all reciprocity treaties now pending in the Senate. The reason for this action is that the administration finds itself greatly embarrassed by not being able to reply definitely to inquiries from the representatives of the nations with which the treaties were negotiated concerning their present status and the outlook for final action. Incidentally, the committee believe that important commercial interests will be served by a decision at an early date on the point as to whether these conventions are to be ratified or rejected.

With a view to bringing the discussion of the treaties in committee up to date, it was recently decided to give a hearing to a prominent representative of the friends and of the opponents of the principal conventions. Senator Aldrich was selected to represent the opposition to the ratification of the French treaty in particular, and Mr. McCoy, who assisted Commissioner Kasson in the negotiation of all the pending conventions, was chosen to advocate favorable reports.

Senator Aldrich's Argument.

In accordance with this arrangement Senator Aldrich appeared before the committee and occupied two hours in an extended argument against ratification. He asserted, in the first place, that the United States was entitled to the minimum rates of the French tariff under the "most favored nation" clause of our treaties of commerce and navigation with France, and that we should have received the concessions made to us in the French reciprocity treaty without reducing our own tariff rates below those maintained against the principal nations of the world. The maintenance of maximum rates against the United States, he contended, was a direct discrimination which this Government was entitled to have removed without granting any special concessions in return.

Senator Aldrich argued, in the second place, that while, numerically, more concessions were granted by France to the United States than were reciprocally conceded by this Government to France, yet in point of importance the French Government secured by far the better bargain. Owing to the subdivisions employed in the French tariff, by which a larger number of specified articles are made dutiable, the total number of concessions by France, he asserted, was made to appear quite formidable, but it should also be remembered that some important exports of the United States were excepted from the enjoyment of the minimum rates of the French tariff, including especially machine tools, boots and shoes, &c.

The third contention presented by Senator Aldrich was that, without regard to the question as to whether the treaty as a whole was a fair exchange, it was evident that the American negotiator had lost sight of the conditions prevailing in several important industries, especially in the manufacture of knit goods and jewelry, and had made concessions in the rates on these products much higher than the general average of the treaty and higher than the present development of the industries would warrant. He therefore urged the committee to report the treaty adversely on the general grounds specified. He also expressed doubt as to the advisability of making a favorable report upon any pending treaty, and he intimated that he took it for granted there would be no action upon the Argentine treaty, which provides for a 20 per cent. reduction in the rates on wool and hides.

The Other Side.

Mr. McCoy, who has been chosen to speak on the other side of the treaties, will have a hearing during the present week. He has been chosen because of the fact that Commissioner Kasson is not in robust health, and because he is thoroughly familiar with the technical details of all the treaties and of the French convention in particular. A strong effort will be made to show the fallacy of Senator Aldrich's contentions, especially that relating to the right of the United States to enjoy the

minimum rates of the French treaty without regard to reciprocal concessions. It will be contended that nearly all the leading European countries have secured the minimum rates from France by negotiating reciprocal treaties containing very important concessions.

So far as the fairness of the bargain represented by the treaty is concerned, it will be maintained that the statistics of the Franco-American commerce in the three years since the treaty was negotiated bear out very graphically the assertion that the United States received more than it gave in the treaty, not to mention the highly important fact that the negotiation of the treaty, although it was not ratified, nevertheless resulted in the suspension of a strong movement in the French Chamber of Deputies and Senate having for its object the placing of prohibitory duty on such important products of the United States as petroleum, cotton seed oil, &c., which are now shipped to France in very large quantities.

Treaties Still Alive.

After careful investigation into the present status of the pending treaties with reference to the provisions of section 4 of the Dingley act, which require that treaties negotiated thereunder should be "entered into" within two years from July 24, 1897, a subcommittee of which Senator Spooner is chairman has reported that in view of the extensions agreed to by the signatory powers all the treaties are still alive. The subcommittee has also reported upon the questions as to whether the treaties become operative without special legislation on the part of both houses of Congress, and, while holding that the President and the Senate can negotiate, ratify and proclaim such treaties without consulting the House, it has nevertheless recommended that all the pending treaties be amended by the incorporation of a provision that "this treaty shall not take effect until the same shall be approved by the Congress."

The report, which has a wide bearing upon the general subject of reciprocity treaties, is in part as follows:

"The President and the Senate are, under the Constitution, the treaty making power. The initiative lies with the President. He can negotiate such treaties as may seem to him wise, and propose them to the Senate for the advice and consent of that body, which is as free and independent in its action upon the same as the President is in exercising his power of initiative and negotiation. The power of the President and the Senate is derived from the Constitution. There is under our system no other source of treaty making power. The Congress is without power to grant to the President or to the Senate any authority in respect of treaties, nor does the Congress possess any power to fetter or limit in any way the President or the Senate in the exercise of this constitutional function. It cannot enlarge or in any wise limit or attach conditions to the exercise of the treaty making power.

"Whether the treaty is one which is self executing, or one which requires legislation by the Congress to give it effect, it must first in any event be negotiated by the President and ratified by the Senate. Whether he will negotiate a treaty, and when, and what its terms shall be, are matters committed by the Constitution entirely to the discretion of the President, and whether the Senate will advise and consent to it, with or without amendment, is a matter committed entirely to the discretion of the Senate. If a treaty be such as to require legislative action, and when entered into by the President and ratified by the Senate does not meet the approval of Congress, it has the power to withhold the legislation requisite to give it effect, but with the preliminary steps of negotiation and ratification the Congress has nothing whatever, under the Constitution, to do.

"The subcommittee is clearly of the opinion, therefore, that nothing contained in section 4 constitutes any valid restriction upon the jurisdiction and power of the Senate to act upon the commercial treaties now pending. Whether such treaties operate without the approval of Congress to change tariff duties theretofore fixed by law is a question not involved, and upon which the subcommittee expresses no opinion. The fact that the Senate as a legislative body concurred with the House of Representatives in the enactment of the Tariff act of 1897, including section 4, is without weight upon the subject, for the obvious reason that it is impossible for the Senate

by participation, deliberate or inadvertent, as a legislative body in such an enactment to disable itself in the slightest degree from exercising the power conferred upon it by the Constitution to act upon treaties negotiated by the Executive. It is entirely competent for the Senate to amend these treaties so as to provide that they shall not take effect without the approval of Congress. Several treaties have thus provided, among others that with the Hawaiian Government in 1876. Such an amendment cannot be objected to by the Governments which have entered into these treaties with the United States, because they were known to be entered into with reference to the provisions of section 4. The subcommittee therefore recommend, without reference to the merits thereof, that each of said treaties be amended by the Senate by inserting therein the following additional provision:

"This treaty shall not take effect until the same shall have been approved by the Congress." W. L. C.

Central Pennsylvania News.

HARRISBURG, Pa., March 25, 1902.—The Superior Chain Company have been formed by George Walker, J. Harper Seidel and others of Marysville, and will build a \$15,000 works in Perry County near this city.

The American Foundry & Machine Company, who were recently formed at Hanover, will begin operations on April 1, and will employ 100 hands.

The works of the Columbia Grey Iron Company, at Columbia, was slightly damaged by fire this week, and compelled to suspend for repairs.

Lock Ridge Furnace, No. 7 of the Thomas Iron Company's stack, has been blown out for repairs, and will be started as soon as possible. The rest of the company's available furnaces are at work.

There are lively times about Lewistown. All of the works are at work, and the Standard Steel Company have let contracts for a number of extensions and new buildings, which, when completed, will require a total force of about 3000 men. Work is being hurried, as the company have many orders to fill. The company are running all departments.

The Lewistown Foundry & Machine Company are enlarging their plant at Lewistown. A new foundry is being built and large store, wareroom and new office building will be erected. The officers of the company are: J. M. Goodhart, president; G. L. Russell, vice-president and treasurer; H. J. Fosnot, secretary, and T. H. Brandon, superintendent.

The Carbondale Metal Working Company will make some changes to their works in order to accommodate a new process.

The American Bridge Company have sent a force of men to Lebanon to erect the new buildings for the American Iron & Steel Mfg. Company's new works at that place.

Several of the Chester steel works have been seriously inconvenienced the last fortnight by shortage of material, and some casting works have lost time.

The Fayette Mfg. Company of Chester have awarded contracts for the building of a cupola house, 80 x 45 feet, a power house, 51 x 80 feet, and two manufacturing buildings over 100 x 90. Other buildings will be built later in the year. William A. Stanton is president and E. H. Allen, secretary.

Columbia reports are that preliminary work on the construction of the new pipe mill of the Susquehanna Iron & Steel Company will be started with vigor very soon. The company's mills are all busy, while both furnaces are in blast.

The hearth and other parts of No. 2 Paxton Furnace in this city are being enlarged by the Paxton Iron & Steel Company. The stack will be blown in some time in April.

There are assurances of better times in the Upper Juniata Valley. Repairs are being made to one of the Saxton furnaces, and many of the mills are being run regularly. Changes in management and control have brightened the possibilities of resumption at the Rock Hill furnaces in Huntingdon County. Altoona and other Blair County concerns are all working. Pros-

pects are also better at Cambria by reason of the Pennsylvania Railroad's intention to build many steel cars, which the Cambria are well equipped to build, and which they expect by reason of their close relation with the railroad company. The Cambria Company have also secured the order for the steel work for the new buildings for the Westinghouse Machine Company's projected plant at Stewart Station in Westmoreland County.

The E. & G. Brooke Iron Company have blown in their No. 2 Furnace at Birdsboro. There are reports of improvements projected at Sheridan.

The Reading Railroad Company have started part of their new locomotive works in Reading.

Charters have been issued at the State Capitol to the following iron and steel manufacturing companies: Burns Uniform Steel & Metallic Company, Pittsburgh; capital, \$1000; incorporators, William McJunkin, J. J. Bulger, E. Furburn, James Burns, J. J. FitzGerald, W. R. Vogel and Theodore Swartling, Pittsburgh, and Harry T. Young, Montooth. Fleetwood Foundry & Machine Company, Fleetwood; capital, \$50,000; incorporators, H. F. L. Rummel, Adam W. Haag, E. R. Kemmerer, William M. Zechman and J. W. Fisher, all of Reading. John Elchleay, Jr., Structural Steel Company, Pittsburgh; capital, \$1000; incorporators, John Elchleay, Jr., J. P., W. B. and Margaret Elchleay and John Elchleay, Jr., trustee, all of Pittsburgh. Hussey-Binns Shovel Company, Pittsburgh; capital, \$1000; incorporators, Edward B. Alsop, G. V. Wilson, E. H. Binns, R. H. Binns and John A. Hussey, all of Pittsburgh. Bigham Hardware & Supply Company, Ellwood City; capital, \$15,000; incorporators, F. L. Bigham, J. E. Van Garder, R. T. Brown and W. D. Boots, Ellwood City; James Martin, New Castle. American Conduit Mfg. Company, New Kensington; capital, \$25,000; incorporators, Alexander W. Logan, Parnassus; C. R. Rhodes, Pittsburgh; Charles A. Fleck and Samuel A. Taylor, Wilksburg, and R. H. Bellman, New Kensington. s.

A Large Contract for a Power House.

All the contracts for the building of the main power station of the Pittsburgh, McKeesport & Connellsville Electric Railway, to be erected at New Haven, Pa., have been awarded, the last contract given out being that for the buildings, which was given to James Stewart & Co. of Pittsburgh, Pa. The contract for the buildings calls for completion about June 20. The building will be constructed of buff brick and stone, with a steel superstructure. It will be 135 feet long, 100 feet wide and about 50 feet high. Included in the contract for building is the construction of a large brick smoke stack, which will have a diameter of 12 feet, and will be 200 feet high. The building will be a two-story structure, with the exception of 45 feet; but under the latter there will be a 12-foot basement to provide space for extra power machinery in the event of the increase being found necessary. That part of the second floor located over the boiler room, which will be separate from the main structure by thick fire walls, will be used for the storage of coal, as the entire supply will be kept there. The coal and ashes will all be handled by machinery, as it is the intention to install separate plants for that purpose.

The Westinghouse Electric & Mfg. Company will furnish the machinery for generating power. This part of the plant will consist of three generators, each of 1850 horse-power capacity. The pumping and condensing plant, which will have a capacity of 6,000,000 gallons daily, will be installed by Henry R. Worthington of New York. The engines, of which there will be three, will be vertical Allis engines, and will be installed by the Allis-Chalmers Company of Milwaukee, Wis. The boiler plant will consist of two batteries, each containing six boilers with a total steam generating capacity of 6000 horse-power. In addition to the coal and ash handling machinery there will also be installed a 30-ton electrically operated crane for use in handling heavy machinery.

The cost of the plant will amount to almost \$500,000,

divided as follows: Building, \$100,000; engines, \$110,000; electrical equipment, \$145,000; boilers, \$42,000; pumps and condensers, \$11,000; ash and coal handling plant, \$5000; crane, \$7500. In addition to the main power plant there will be erected nine substations along the line. The locations for these have not been definitely decided on, but they will cost in the neighborhood of \$25,000 each.

Notes from Mexico.

Banking and Exchange.

DURANGO, March 20, 1902.—There is possibly no better indicator of the condition of the commercial interests than that which the periodical statements of the banks supply. By this test Mexico appears to be extremely prosperous at the present time, the financial institutions of the country being without exception in a flourishing condition. The old institutions are extending their operations and new banks are reported as being started from time to time in various States. Two or three of the leading banks have recently declared dividends which indicate prosperity, for example, the Banco Central of Puebla at a recent meeting of its shareholders reported a net profit of \$314,000 for last year's operations, \$240,000, or 8 per cent., on the capital stock of \$3,000,000, was distributed among the shareholders, the balance being credited to the reserve fund.

Among the new banks recently started is one in the

Production of Silver and Gold.

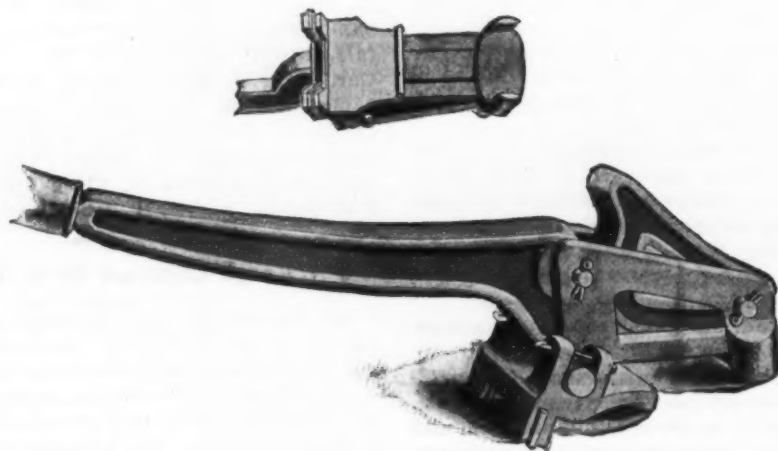
The same authority gives the following data relative to the production of silver and gold in the same period: "Total production of silver, \$18,110,226.19, and of gold, \$2,217,718.16; total, \$20,327,044.35, against \$19,952,749.46 silver and \$1,941,172.32 gold; total, \$21,893,921.68, in July, August, September and October of 1900."

Reported Petroleum Strikes.

It is said by the Mexican City press that petroleum wells of 700 barrels daily capacity have been struck in the State of Tamaulipas. The report says apologetically: "The wells do not throw the oil with any force like the Beaumont wells," from which it will be noted that Tamaulipas petroleum is distinctively courteous, as becomes a Mexican product. The report of the "strike" needs confirmation. J. J. D.

The Zelnicker Double Clutch Car Mover.

A new feature in appliances for moving freight cars manually has been introduced by Walter A. Zelnicker of St. Louis, Mo. The concave block which comes in contact with the wheel, as shown in the engraving, turns it but does not lift it. The block does not slip, for the reason that instead of bearing on the top of the rail it grips the sides of the rail by means of the V-shaped jaws shown in the upper view. These jaws are beveled in such a way that in sliding along the rail, fol-



THE ZELNICKER DOUBLE CLUTCH CAR MOVER.

State of Chiapas, under the auspices of citizens of the United States. Chiapas is a State of great promise, with agricultural possibilities which can hardly be overestimated.

The balances of the leading Mexican banks—the National Bank of Mexico and the Bank of London and Mexico—are as follows: National Bank, February 28, cash, \$21,375,385.91; notes, \$3,294,578, against cash, \$20,800,242.55; notes, \$2,208,156, January 31. Notes in circulation February 28, \$26,668,102; January 31, \$25,542,326.

Bank of London and Mexico, February 28, cash, \$15,134,222.32; notes, \$901,255, against cash, \$15,189,059.88; notes, \$1,167,086 January 31. Notes in circulation February 28, \$17,237,323; January 31, \$16,444,063.

The bank of the State of Mexico, with headquarters in Toluca, reports a net profit of \$114,630.16 in 1901, and declared a dividend of 8 per cent., the balance going to the reserve fund and the forward account. Two or three savings banks in the City of Mexico, not long in operation, have entered upon a not very seemly rivalry for small accounts, employing house to house canvassers and distributing savings bank boxes.

There has been another sharp advance in the price of exchange, which is now quoted at a premium of 126.

Exportation of Silver Ores.

According to the figures of the Government Assay Offices, silver ores of the value of \$1,685,915.92 were exported during the first four months of the current fiscal year.

lowing the car, they sharpen themselves. The hooked lever, which works under the block, makes it very easy to operate.

The Bonus in the Australian Iron Industry.

Our Australian correspondent advises us that the following bonuses are to be paid for the establishment of this industry on the lines hereunder:

12 shillings per ton on—

(a) Australian pig iron, that is, pig iron made from Australian ore;

(b) Puddled iron and steel made from Australian pig iron.

The total bonuses not to exceed £250,000, commencing on July 1, 1902, and continuing only for five years.

SPELTER.

Spelter made from Australian ore, £2 per ton for the first 10,000 tons, commencing on July 1, 1902, and continuing for three years only.

GALVANIZED.

Wire netting and iron and steel tubes and pipes, not subject to duty, 10 per cent. ad valorem for three years, from July 1, 1902, the value to be computed as in the case of foreign imports, and bonuses not to exceed £50,000.

REAPERS AND BINDERS.

£8 each on the first 500, commencing on July 1, and ceasing on January 1, 1904.

The bill dealing with above bonuses will be introduced in the House at an early date. Duties will afterward be imposed where it is considered that the industry has been sufficiently established and the local consumer can be supplied at a reasonable rate.

The success of the Canadian bonuses on iron pro-

duction is being taken as an object lesson, while Australia has the additional proof of the success of the butter bonus, which established a large Victorian export trade and in a great degree has proved the salvation of the State of Victoria during the last few years. The ore deposits are said to be rich in iron, especially those of Tasmania, and the necessary coal is close at hand.

Lake Iron Ore Matters.

Lake Freights.

DULUTH, MINN., March 22, 1902.—The United States Steel Corporation seem to have won out completely in their contention as to lake freights for the season, and have now succeeded in closing about 1,200,000 tons of room at the price they have set, 75 cents a ton from Duluth and kindred ports. It is figured that the corporation will not require any additional contract tonnage, aside from their own ships, on account of the gain by the expected earlier opening of navigation, the immense importance of which was shown quite fully in this correspondence a week ago, when this subject was discussed. It was there stated that even a concerted movement among independent vessel owners for a later opening would have no effect, and that the season rate would be less than they had figured. This seems to have been proved true already. This earlier opening of navigation will leave more ore on lower lake docks and in furnace stocks than was estimated, and the recent delays at furnaces have also tended to hold their ore piles at a higher point than was estimated earlier in the winter. When the season opens it will do so at full swing, and an immense tonnage of ore will be crowded forward at once, the capacity of ships being, as it now seems, the only limit.

The Duluth & Iron Range Railroad.

Unofficially but from an authoritative source, it is stated to me that the Duluth & Iron Range road will probably be called on to move this season 6,000,000 gross tons of ore to the lake. This will mean for some months at least 1,250,000 tons, and it is expected that the road will haul in single months as high as 1,500,000 tons—a season's business ten years ago. "We will this year have the first full benefit of our new trackage and rolling stock. We will have a track that will be as nearly perfect on May 30 as it is possible for permanent way to be. Last summer we shoved in ballast on the new tracks till we have from 4 to 5 feet of gravel under the rails for many miles. We have in all places where the heaviest use will come 100-pound steel, and elsewhere 80-pound. We will place six pushing stations along the road where engines will be stationed to assist trains over grades against traffic. These stations are now being put in, and equipped with water tanks and coaling trestles. We were able last fall, in an experimental way, to haul 80 loaded cars of ore per train, each car carrying 27 gross tons. We shall do something like this, probably, as a regular thing this year after some initial experimenting. No full train of the 50-ton steel cars has ever been hauled over this road; experiments with these cars began with four cars to the train, then ten were put in at the head end, and later as high as 15. There is no reason why full trains should not be hauled, for the steel car makes the safest train there is for such heavy traffic as iron ore. The Duluth & Iron Range road has 350 of these cars, and will have no addition to its last year's equipment except for 350 wood cars formerly used by the Duluth, Missabe & Northern road. This would indicate, that the latter line will not greatly increase its business over last year."

The Ore Fleet.

Ore hauling to Lake Superior will begin on several of the leading roads on April 1, and boats are expected from the lower lakes about April 10. There is a big fleet of ore carriers belonging to the United States Steel Corporation on Lake Superior now, 30 at Duluth, and these will be at the ore docks before the 10th prox. It is expected that the Sault Canal repairs that have been in progress all winter will be completed sufficiently to per-

mit the passage of ships through the American locks on April 10. The Canadian canal will be ready sooner. In addition to the fleets of ore carriers owned by steel making and mining interests there will be six large ships just secured by the Clergue interest for carrying Helen mine ore to Ohio ports. There are four large wood ships of the Davidson fleet, two steamers and two barges, and two large steel ships now under way at Chicago for E. Carter of Erie. These ships, with the four English built vessels already owned by the Clergue Company, will have a seasonal capacity for about 700,000 tons, an indication of what Mr. Clergue and his associates expect from the Helen this year. That mine is now being opened deep by a shaft, and will be mined by the milling system as soon as the changes can be made.

Remedial Works at Sault Ste. Marie.

An agreement has been made between the lake shipping interest and the Clergue water power concern at Sault Ste. Marie, by which the matter of regulation of the Clergue Michigan Canal, to be opened this year, will be left to the Secretary of War and the chief engineer of the army. This decision was reached at Washington a few days ago after some days of sharp discussion, and is understood to be satisfactory to all concerned. The agreement authorizes the water power company to take water for power purposes so long as it does not impair the level of Lake Superior or of the channels connected therewith, and orders the company to construct remedial works to check an excessive flow. As a matter of fact these remedial works have been under way for many months and are now well along, and no one would be more seriously affected by a diminution of the flow from Lake Superior or by a decrease of the head than the power company, whose works are planned for a constant effective head of just what is available at this time.

Another purchase of siliceous ore deposits has been made by the Oliver Iron Mining Company, this time the 160 acres including the Primrose mine on the Cascade range. This gives the company the best of the siliceous ores of the Marquette district, which will be a particular advantage in mixing with Mesabas.

The activity in new properties on the Mesaba range is shown by the fact that the Eastern Railway of Minnesota has let contracts for the immediate building of eight branch lines to mines that it did not reach, and expects to build to still others during the year. The Duluth, Missabe & Northern has let a contract to build to the Snyder-Oliver mine, and may run a track to others later. It is reported, and with considerable detail, that the Eastern Railway Company are exploring some 35 miles northwest of Hibbing for the western extension of the Vermillion range, and that they have had three drills there since last August. Float ore and other indications of the formation are found all the way from the Vermillion mines of the Minnesota Iron Company, in town 62-15, westerly to 60-24, a distance of about 60 miles. This region has never been explored, though some work has been done in past years in 60-24 and 22.

Under the name of the Rhoades Mining Company the Cherry Valley Iron Company have become interested in mineral properties on the Central Mesaba, and may do some development work this year. Under the name of the Elizabeth Iron Company P. L. Kimberley has taken a State lease that has been on the market for some time. Eastern interests are negotiating for an ore property in section 27-58-20, where there are now shown up some 3,500,000 tons of ore. A new corporation for carrying on exploratory work in Minnesota, both by diamond drill and other methods, are being formed by a company of responsible Duluth men. The expectations are that an immense amount of drill work will be done the coming year, and that the Vermillion range may once more be examined more or less thoroughly.

D. E. W.

H. J. Stevens of Houghton, Mich., has issued the second number of his "Copper Handbook," Volume I of which came out at the close of 1901. This is a volume devoted entirely to copper interests, largely to lake copper, though it covers the industry universally, describing all leading mines and giving statistics of copper every-

where and for a long series of years. Its descriptions of mines are almost entirely from first hand from official statements and make the book of much value. It is well indexed and contains a full glossary of mining terms, &c.

The Northall Inclosed Direct Current Lamp.

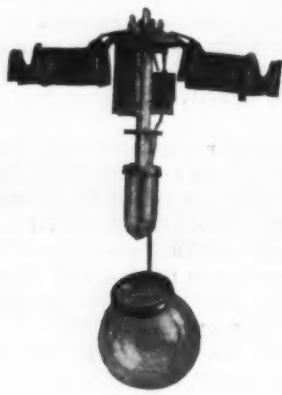
The standard direct current lamp manufactured by the Lea Electric Mfg. Company of Elwood, Ind., is here illustrated, both closed and open. The construction of the lamp is very simple, as a solenoid, lever, dash pot and clutch make up the actuating mechanism.

A special feature is the swinging hinged covers for both indoor and outdoor types, which automatically catch when opened and remain in place, making every part perfectly accessible. When closed these covers snap together tightly and are locked by giving a few turns to a round nut. The globe or shade is held by a metal ring which catches into the covers by a single pawl. It can be immediately removed or replaced.

The adjustment of the lamp is accomplished easily. The resistance is changed by loosening a screw and slipping a contact band up or down. The current is altered by adding small weights to or taking them from a metal cup placed on the lever over the dash pot. The resistance is wound on two solid grooved porcelain pieces. It cannot short circuit or burn out. The upper carbon is entirely inclosed. This prevents air from en-



Closed.



Open.

THE NORTHALL INCLOSED DIRECT CURRENT LAMP.

tering around it into the inner globe and greatly increases the carbon life. The lower carbon is held by a cam lock, which prevents breakage and makes it more secure. The carbon does not have to be cut off to an extra length. The outer and inner globes are held from above by two fingers, which allows them to be removed while hot and which prevent shadows. The weight of this lamp, with shade and inner globe, is 24½ pounds. The length is 22 inches over all.

A committee of the American Railway Engineering and Maintenance of Way Association reports that the rail mills in 1901 rolled the following percentages of their total output to the sections of the American Society of Civil Engineers:

| | Per cent. |
|---------------------------------|-----------|
| National Steel Company..... | 95.0 |
| Pennsylvania Steel Company..... | 93.2 |
| Illinois Steel Company..... | 70.0 |
| Cambria Steel Company..... | 73.5 |
| Carnegie Steel Company..... | 72.0 |
| Maryland Steel Company..... | 5.2 |
| Lackawanna Steel Company..... | 37.2 |

The low percentage of A. S. C. E. output from the Maryland Steel Company is explained by the fact that a large amount of rail of special pattern was rolled for export; also that the Pennsylvania lines east of Pittsburgh and the Baltimore & Ohio used special patterns. The Lackawanna Steel Company rolled a large tonnage of the Dudley pattern for the New York Central lines.

The Metric System in Government Departments.

WASHINGTON, D. C., March 18, 1902.—The Shafroth bill providing for the adoption by the United States of the metric system of weights and measures on the 13th inst. was ordered to be favorably reported to the House by the Committee on Coinage, Weights and Measures. But two dissenting votes were cast against the measure. The only amendment made in the original text of the bill related to the dates of taking effect, the measure as agreed to providing as follows:

"That on and after January 1, 1904, all the Departments of the Government of the United States, in the transaction of all business requiring the use of weights and measures, except in completing the survey of public lands, shall employ and use only the weights and measures of the metric system; and on and after January 1, 1907, the weights and measures of the metric system shall be legal standard weights and measures in the United States."

The chief provision of the bill is universally recognized to be the compulsory adoption of the system by the Departments of the Government, which will take place in less than two years. The example thus set by all Federal offices is counted upon to exercise a great influence upon the general public and to aid in bringing about the universal use of the system. The provision that the system shall be the legal standard after January 1, 1907, is regarded as declaratory only, and it is expected by the committee that the public will speedily follow the Government in taking up the system.

During the past fortnight the committee has received a few communications from manufacturers who seem to fear that the bill, if it becomes a law, will compel them to discard all their machinery and install new equipments made on a metric basis. As this is not the purpose of the measure, and in order to relieve all apprehensions on this score, Chairman Southard has advised all such parties of the opinion of the Attorney-General, which was published practically in full in *The Iron Age*.

The decision of the committee to report the metric bill favorably, and making its provisions obligatory upon the Government January 1, 1904, has aroused the liveliest interest in the Government Departments, where the system will first go into practical use. It is conceded that the chief inconvenience to be suffered in connection with the transition from the present system to the metric will be felt by those Departments of the Government engaged in mechanical operations, as, for example, the War Department, which controls the Bureau of Ordnance, the gun shops and the various arsenals throughout the country; and the Navy Department with its Ordnance Bureau, Bureau of Steam Engineering, Bureau of Construction and Repair and its numerous navy yards and naval stations. The bill as reported provides for the adoption of the metric system of weights and measures in these various bureaus two years hence; and it necessarily follows that considerable preliminary work will be required to put them on a metric basis. The installation of the system, however, will not be instantaneous, but will take place under such regulations as shall be prescribed by the heads of the Departments, in accordance with the practical requirements. It will probably be some time after the bill actually takes effect before all work can be placed on a metric basis, assuming that the bill becomes a law.

So far as the War Department is concerned, the Ordnance Bureau, which is chiefly interested in the subject, is very favorably disposed toward the change. General Crozier recently appeared before the committee and gave it as his opinion that the change was highly desirable and would be worth a great deal more to the United States than it would cost. The Ordnance Bureau of the Navy Department is understood to be favorable to the system, especially in connection with gun construction. The Bureau of Steam Engineering is not so well disposed, although Chief Engineer Melville bases his objection to the system solely upon the cost of making the change.

The general consensus of Department chiefs throughout the Government service here is that the change to a

universal system will result in great benefits, and the only difference of opinion seems to be with regard to the possible cost of the transition. The committee feels that when the practical operation of the proposed measure is fully understood the importance of the change at an early date will be very generally appreciated. W. L. C.

Improving English Blast Furnaces on American Lines.

After years of doubting and protest, English iron makers seem to realize at last that they must follow American practice. The *Iron and Coal Trades Review* reflects this movement in the following editorial:

It is probably not too much to say that all the pig iron makers in Great Britain are at the present moment looking forward with interest, not unmixed with anxiety, to the possibilities involved in the reconstruction of their existing plants, as typified by the fact that already one of the furnaces of the new order—that recently erected by the Millom & Askam Company—has approached the output of 300 tons per day, or at the rate of over 2000 tons a week, against the hitherto general average of 800 tons per week, more or less, of furnaces using the same description of raw material. The reconstruction now being provided for by the Consett Iron Company, the Dowlais Iron Company and Bolckow, Vaughan & Co.—the largest concerns of their kind, and probably the most wealthy and influential in the United Kingdom—points to the conclusion that they have each and all satisfied themselves that this way safety lies—that they have discarded the old heresies as to the old system of having many furnaces in the place of few, for the production of a given output, that were formerly inculcated at the meetings of the Iron and Steel Institute, and elsewhere, and have concluded that the “short life and the merry one” of the large capacity furnace is the proper thing after all. They will be on what are commonly known as American lines, with the typical American bosh, large blowing power, and mechanical arrangements suited to the conditions involved in handling an enormous volume of raw materials in a given period of time. We do not anticipate, of course, that the output of the new plants will ever reach the remarkably high levels of American records. It is not to be expected that British blast furnaces, using ores that range from 45 per cent. to 48 per cent. of iron, can ever reach the 700 tons per day and upward which have been got from American furnaces using ores that assay 60 per cent. to 65 per cent. of iron in the dry state. But we do not doubt that furnaces can be, and will be, constructed in Great Britain that are able to produce from ores probably averaging about 47 per cent. quite 400 tons of pig per day, which is more than three times the average daily output of the present time; and we shall be surprised if the ambition of British ironmasters, and the guarantees given by their American advisers, stop much short of this record, while it is quite probable that it may be exceeded.

What, then, will be the relative competitive position of works that are content to go on “dragging their weary length along” with furnaces that produce 800 to 900 tons per week with hematite ores, and 450 to 650 tons per week with other ores? Will it not be found that the new furnaces are stronger to hold their own, in fair weather or in foul, than the older type? This is the problem that many of our leading furnace owners are anxiously seeking to solve at the moment. For these new furnaces involve a capital expenditure to which British ironmasters have hitherto been unaccustomed. The Millom Company's new furnace has cost that concern upward of £65,000, whereas it has hitherto been considered that an expenditure of £30,000 per furnace was pretty liberal, and there are many furnaces now at work in Scotland and in the Midlands that have cost £20,000 per furnace, all elements of outlay included. One great question that the ironmasters are yet asking, and have been asking for many years past, is whether per unit of outlay the new fur-

naces will do any better than the old. Another is whether the new furnaces can reduce the labor cost at the furnaces much below its present figure at best regulated plants of the older type? Both of these questions are likely before long to receive a much more definite and decisive reply than they have yet done in this country, where the only plants hitherto built with any pretensions to the adoption of American ideas are those of the Dowlais Iron Company and one furnace at the Jarrow works of Palmer's Shipbuilding & Iron Company, both of which may now be regarded as getting obsolete from the American standpoint. It is clear, however, that whatever else may be in doubt the success of the new departure would be likely to mean the closing up, or the reconstruction, of many small plants that would find it difficult to compete under the new conditions. We would therefore strongly urge the owners of blast furnaces all over the United Kingdom to keep a watchful eye for the next few months on the movements and records of the firms we have named, and if the result of their policy should be—as it most likely will—to prove the necessity of a radical change, then to face the necessities of the situation with all the energy and enterprise that have made British industry what it has been, is still, and must remain in the future.

Large Contracts for Blowing Engines.

The Westinghouse Machine Company of Pittsburgh have recently taken contracts for six blowing engines of the largest type. The engines will be installed at the blast furnace of the Toledo Furnace Company of Toledo, Ohio, and the South Chicago Furnace Company of Chicago. The reception of the contract places the Westinghouse Machine Company fully in the mill engine field with an equipment making possible the construction of the largest engines of any design. The contracts were placed by Julian Kennedy of Pittsburgh, who is consulting engineer for both of the above concerns.

Three of the engines will be installed at each furnace, and they will be so arranged that they can be run as compound or single engines. Each set will consist of two high pressure and one low pressure engine. The low pressure engine will be used as an auxiliary, and when it is in use the high pressure engine will receive steam at the boiler pressure and exhaust into the receiver, from which the low pressure engine will be supplied. When the low pressure engine is in use as a simple engine it will receive steam from the boiler through a reducing valve. Each high pressure engine will have a steam cylinder 50 inches in diameter, fitted with the most modern design of Corliss valve gear. The low pressure steam cylinder will be 96 inches in diameter, and will be equipped with the same appliances. The air cylinder in all engines will be 96 inches in diameter, and the stroke will be 66 inches. The engines will make 60 revolutions per minute. The air cylinders will be equipped with the Kennedy piston inlet and outlet valve. The engines will be of a special type, with the blowing cylinder immediately above a heavy bed plate. On top of the blowing cylinder will be a heavy housing and guide box, and on top of the guide box will be the steam cylinder. The advantage is that the engines are very compact. Each of them will weigh 600,000 pounds. Each will have two fly wheels 20 feet in diameter, each weighing 65,000 pounds.

The Westinghouse Machine Company also have become competitors in the horizontal Corliss engine field. The company have taken contracts for two such engines of 3000 horse-power each from the Auburn Interurban Railway Company of Auburn, N. Y. These engines will cost \$70,000. The company have just completed the shipment of eight of the heaviest engines ever built, each having a capacity of 10,000 horse-power. These engines have been sent to the New York Edison Water-side Station. The company are also shipping two vertical Corliss engines of 2000 horse-power each to the new works of the British Westinghouse Company, at Manchester, England.

Worcester Industrial News.

WORCESTER, MASS., March 24, 1902.—The Republic Iron & Steel Company have placed an order with the Morgan Construction Company of Worcester for three roughing trains to supply material for their merchant bar mills at their Brown-Bonnell plant at Youngstown, Ohio. The order also includes an automatic straightening and cooling bed, five Morgan gas producers with Bildt patent automatic feeds and three Morgan suspended roof billet heating furnaces.

P. Blaisdell & Co., manufacturers of engine lathes and upright drills, report an unusual condition of business. Orders are coming in with such rapidity that all orders for special machinery, which ordinarily the concern make a feature of, have to be refused. Orders can be taken only on two months' delivery. The firm report that the demand for their tools from England and France has materially increased of late. Last year showed a diminution of foreign orders, owing to the unfavorable conditions of manufacturing business abroad, but the tide seems to have turned, according to the orders received by P. Blaisdell & Co. This concern, in common with other Worcester machine tool builders, are receiving inquiries which indicate that a number of large orders are soon to be placed, and their New York correspondents make the same report. The fact that the Worcester shops are filled with business may preclude competition from this city in the bidding for this new business.

Ground has been broken for the new plant of the Morgan Motor Company to be built at Barbers Crossing. It is expected by the company that the new shop, already described in the Worcester letter to *The Iron Age*, will be ready for business soon after May 1, when the manufacture of the Morgan steam truck will begin.

The Baker Lead Mfg. Company of Worcester have brought suit in the United States Circuit Court at Trenton, N. J., against the National Lead Company to recover for an alleged infringement of a patent for the method of manufacturing round bottom, or "pot," traps. The damages named in the suit are \$100,000.

The Providence, R. I., plant of the Crompton & Knowles Loom Works of Worcester was damaged by fire to the extent of \$25,000 recently, but is now doing business as formerly, all the necessary repairs having been completed. The Providence department was formerly the Stafford Loom Works.

The International Power Company of Providence, R. I., have acquired the shops of the American Ordnance Company at Bridgeport, Ct., and it is planned to conduct the manufacture of the Diesel combustion engine there. The American Diesel Engine Company, who are a constituent part of the International Power Company, had announced that the Worcester plant of the International Power Company, formerly the plant of the American Wheelock Engine Company, would be equipped for the manufacture of the Diesel engine. An officer of the company told the correspondent of *The Iron Age* that this plan was not abandoned, that it was the belief of the officers of the company that the demand for this engine would require the operation of both the Worcester and the Bridgeport plants, and that the work of equipping the former plant would continue. Some new machine tools have arrived, and others have been ordered, but it is expected that some time will elapse before the work of building Diesel engines in Worcester begins.

A good deal of steel is being received in Worcester from England in addition to the regular supply of Swedish iron for the Washburn & Moen department of the American Steel & Wire Company. Worcester iron and steel men are fully convinced that a steel famine is imminent and are taking precautions against the same. Orders are being placed across the water that there may be no chance of crippling production from lack of raw material. At present prices the English steel is costing Worcester concerns little more than the American product, and there is a certainty of delivery which cannot be had from American steel producers.

The Worcester Cycle Chain Company, formerly the Hendricks Bicycle Company, have gone out of business.

The Baldwin Locomotive Works have placed an order with the Plunger Elevator Company of Worcester for a freight elevator to have a lifting capacity of 80,000 pounds. It will be installed in a six-story building at the Philadelphia plant, and will be employed for lifting locomotive tenders between the first and sixth floors. The tenders are built on the first floor, and are painted on the sixth. A single plunger, 18 inches in outside diameter, will lift the car 70 feet.

The F. E. Reed Company shipped last week a carload of lathes for the Manual Training School at Washington, D. C. There were 30 lathes in the shipment, some of them engine lathes, the rest the manual training lathe, which is one of the products of the Reed shops.

The Washburn & Moen department of the American Steel & Wire Company are to substitute fuel oil for coal in their open hearth steel furnaces at the South Works, Worcester. Two storage tanks will be built immediately, each 35 feet in diameter and 20 feet in height. The oil will go to the furnaces through pipes, and will be burned as gas. It is claimed for the crude oil that it is more economical than coal in open hearth furnaces.

Several of the Worcester machine tool builders have received large shipments of their tools sent by them to Germany, and for months supposed by them to have been sold. In this the Worcester men are sufferers in common with all other manufacturers of machine tools who have been doing business with German houses. The tools were ordered when the great boom was on in Germany a year ago and more. The boom collapsed, and finally the American manufacturers were compelled to take back their tools. They came in free of duty, but it was nevertheless an expensive undertaking. Some of the tools had never been unboxed since they left the shops here, and the voyages across the water and long lying in warehouses abroad had done the tools no good. The deputy collector having in charge the Worcester branch of the Boston custom house is responsible for the statement that at one time 150 cases of returned machine tools were on the docks at Boston. However, there is great demand for just such tools, and after a cleaning up the machines intended for Germany will be ready for new customers. It might have been possible to sell the tools in France, had it not been that they were made for use with the English yard rule, instead of the metric system. Other special features made them unfit for the English market.

The will of Jerome Wheelock, inventor and builder of the Wheelock engine, is being contested by one of his sons. The will gives \$100,000 to the city of Worcester, the income to accrue until a sufficient sum has been realized for erecting a heroic bronze statue of Mr. Wheelock, after which the principal of the fund may be used as the city shall decide. Another \$100,000 is bequeathed to the town of Grafton, Mass., the testator's birthplace, to be used for the building of a town hall, in which shall be a bronze statue of Mr. Wheelock; or, if the town prefers, it may erect a bronze statue of heroic size on the town common, and use the principal for other purposes than the hall. Other bequests to local institutions convey the condition of full length, life sized oil portraits. Mr. Wheelock left an estate variously estimated at from \$500,000 to \$1,000,000.

The Parker Wire Goods Company of Worcester are about to place on the market a device to be called the Star meat tenderer, whose purpose is to render tough meat more tender by cutting and separating the fibrous tissues and tendons. The patent has been issued to Arthur H. Parker, president and treasurer of the company.

Col. Charles H. Watanabe, formerly of the Japanese army and now connected with the Japanese Legation at Washington, was in Worcester last week, and went over the machine shops of the Prentice Bros.' Company. The purpose of the visit to Worcester was the purchase of machine tools for the Japanese Government. J. N.

Reports from England state that 30,000 tons of Russian foundry iron have been sold for shipment to this country and that an export bounty is paid on this iron.

The Rolling of Sections in Iron and Steel.

BY ADOLPH S. WHILE, HUCHESOFFKA, RUSSIA.

The shape or section of iron or steel which is the most readily and easily adapted for rolling has the fiber or grain of the metal more evenly retained throughout its parts, through the more equal distribution of draft and readier flow of the metal between the rolls.

An irregular section, one with acute angles, corners or projections obstructing the natural flow of the metal,

cogged down to 7 inches square, one-half of the bloom rolled as quickly as possible, and the other half allowed to cool and finished at as low a temperature as practicable. Again, a portion of a bloom has been rolled into rails, and the other portion into a square or flat bar. In no instance have the different parts of a rail section or the two portions of a bloom rolled into different sections or at different temperatures given parallel results; although in some instances with soft steel the variation was but slight.

And although it cannot be asserted positively, since actual comparisons are practically impossible—no works

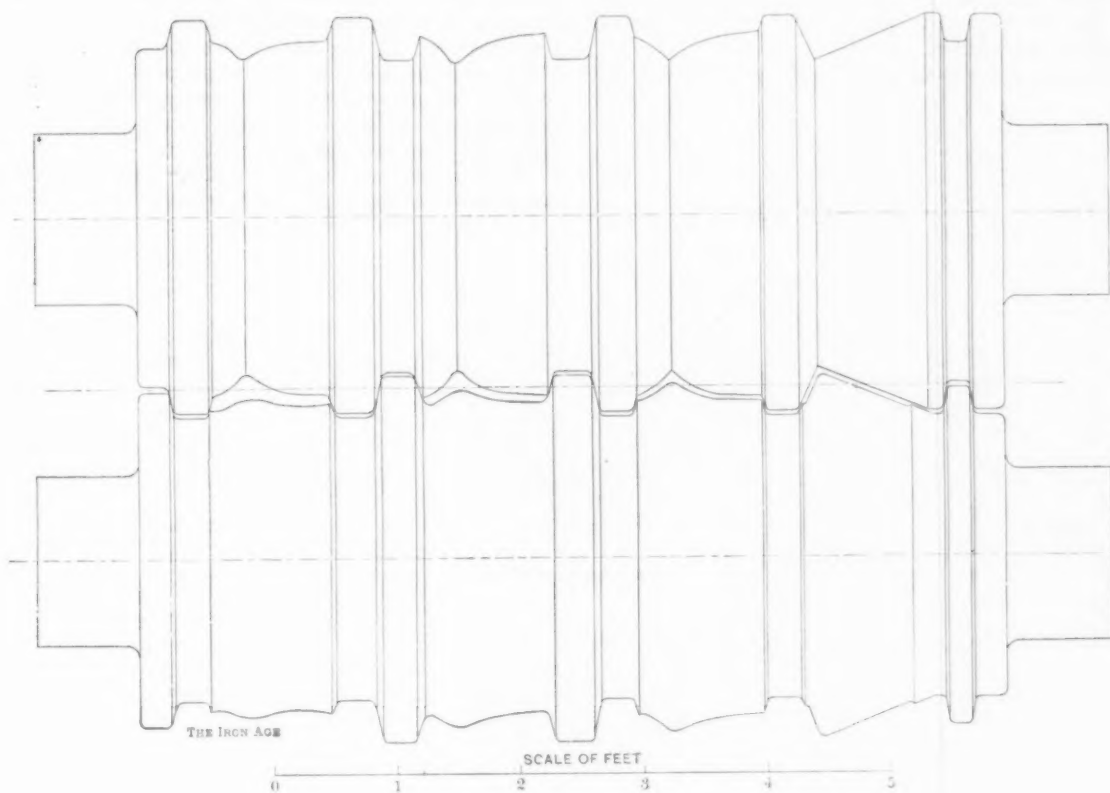


Fig. 1.

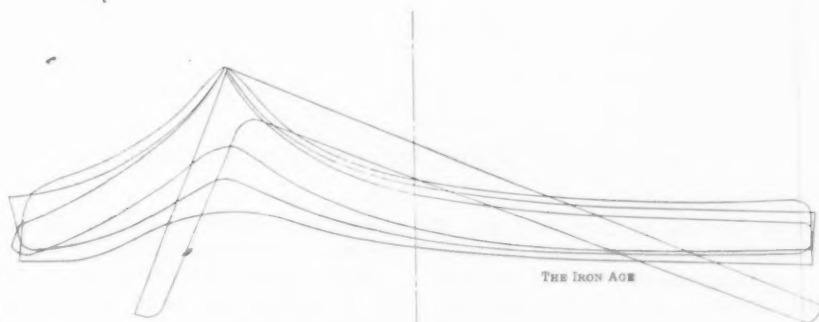


Fig. 1a.

One-third Full Size.

PASSES FOR ROLLING ANGLES.

and which would not evenly retain its temperature during the operation of rolling, would in different parts of its cross section give unequal test results.

From a 20-pound per foot flange rail rolled from a 30-cwt. ingot a piece 20 feet long was sawn, and from the head, web and flange of this piece three flat samples of equal length and shape were cut with a cold saw and gave the following results: The head showed a tensile strength 69.1 kg. per square millimeter, with elongation 10.5 per cent.; the web, 68.8 kg. per square millimeter, with elongation 5.3 per cent., and the flange, 73.1 kg. per square millimeter, with elongation 15.8 per cent.

Experimental tests have been made from ingots

rolling, at the same time, any one section by different methods—yet the conclusion may be drawn that sections rolled by different methods from the same material with similar heat conditions will show variations in tenacity and elongation. From this it would appear that the method of rolling and drafting of passes in the rolls is of considerable importance.

There are in practical use at the present time various methods for rolling rails and sections in iron and steel. In some instances they are necessarily the outcome of local conditions, such as power of plant, &c. Often they are the result of the experience or of the personality of roll designers, the influence of which is noticeable in

many works. The relative merits of these different systems may not be unworthy of consideration. Writing to practical men, who will appreciate the importance of the subject discussed, any elementary remarks are superfluous; and, as the subject in its entirety cannot be so briefly summarized, we will for the present confine our attention to the rolling of angles and channels, as shown by the accompanying designs.

An equal sided shape or section is less difficult to roll than one of unequal sides. The metal being equally divided from the center of the section, any cooling of the bar during the operation of rolling would be equal on both sides; and if the ingot or bloom was uniformly heated, with the rolls evenly drafted and properly adjusted, the bar would deliver straight without the aid of guards or side guides.

An unequal sided section, however, would, when roll-

rolls, the longer side is set at a lesser angle and the shorter at a greater angle in their relation to the axis of the rolls, so that an imaginary line joining the extremities of the angle would be parallel to the axis of the rolls. This position is gradually altered until in the finishing pass the sides are at the same angle in their relation to the axis of the rolls.

It has been observed that with this position of the angle in the finishing pass a greater variety of weight or thickness of angles can be made in one pair of rolls; but in cases where an accurate section is indispensable no system of rolling angles will allow of much variation of thickness in the same passes; for when the rolls are spread apart to increase the thickness of the angle, if the pass is filled, the sides elongate, resulting in inaccurate section. If the passes are not filled, unless the metal is of good quality, the edges of the bar may show defects, on account of the pressure being applied to a considerable extent at the root of the angle, while the extremities receive little or no draft.

It is a practice in some mills, when requiring the same sized angle in different weights or thicknesses, to

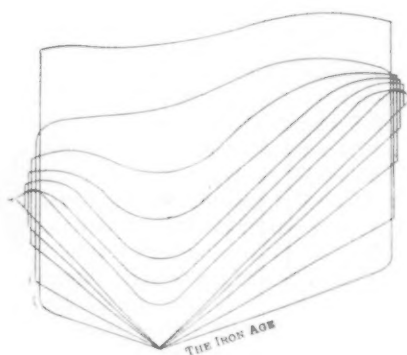


Fig. 2.

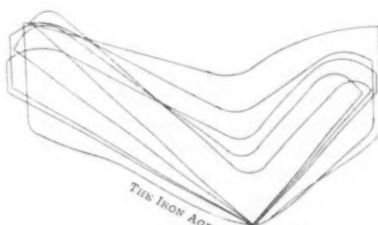


Fig. 3.

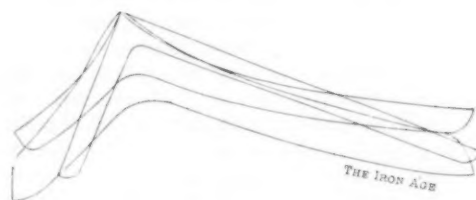


Fig. 4.

One-fourth Full Size.

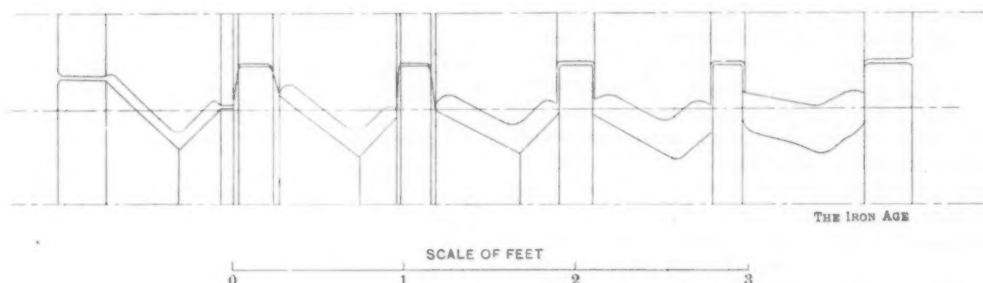


Fig. 3a.

THE SHAPE OF PASSES FOR ROLLING UNEQUAL SIDED ANGLES.

ing, cool more rapidly on the long or thin side; and if when drafting the rolls sufficient allowance had not been made for inequality of temperature, the bar would, when leaving the rolls, curve or deliver sideways; unequal temperature having a similar effect on a bar in the rolls as unequal draft, and if guards or side guides are used to keep it straight (as in practice is generally the case) the bar would twist or buckle on one side.

Figs. 2, 3, 3a and 4 indicate the shape of the passes in the rolls for rolling unequal sided angles as used in a 22-inch train. It will be noted that in Fig. 2 the bar in the second pass is in an inverted position to that of the other six passes—viz., with the inside of the angle downward, the reverse of the other passes, where the point of the angle is in the bottom roll. The working collars forming the sides of the passes are all in the same direction. Any overfilling of the passes at the interstices of the rolls, which would leave a mark or fin, is regulated by the size of the bloom entered into the first pass, and by the beveled corners of the second pass in the bottom roll. The sides of the section are set at the same angle in their relation to the axis of the rolls.

The characteristics of the method shown by Figs. 3 and 3a are similar to that of Fig. 2. The filling of the section is regulated by the shape and size of the bloom entered into the first pass. In setting the passes in the

change the top roll only. Thus the bottom roll is utilized for two or more thicknesses of angles.

Fig. 4 shows the inside of the angle downward, being in reverse position to that in Figs. 2, 3, 3a. By the system, as in Figs. 1 and 5, to prevent overfilling of the passes at the interstices of the rolls, which would leave a mark or fin, the collars are arranged to alternately cover and round the edges of the bar. The diameter of the bottom roll is the same at both extremities of the angle.

Figs. 1, 1a, 5, 5a, 6, 6a and 8, 8a indicate a system of rolling angles and channels adopted in several works in England and Russia. The drawings are from rolls with center or pitch line of 32½ inches, as used in a reversing mill. The ingot, rolled direct, was clogged down to a slab of the required thickness, traversed to the roughing rolls and passed through one forming groove (each section having only one forming groove); thus one pair of roughing rolls was utilized for six different sections of angles and channels, an item of no small importance in a mill required to roll small orders of various sections, through the saving of labor and time when changing rolls. After leaving the clogging the bar is not turned over for succeeding passes; and to prevent any overfilling at the interstices of the rolls, which would leave a mark or fin, the collars are arranged so that the corners

of each side of the bar are alternately covered by one of the rolls.

In general practice, to give control of delivery, the bar is kept well down on the guides resting on the bottom roll. This is done by apportioning the amount of draft over the section together with the diameter of the rolls—viz., the position of the passes in the rolls relative to the center or pitch line. The center line in the drawings shows the position of the passes, with diameter of the rolls, that would keep the bar down on the bottom roll guides and give control of delivery. The

perature of the bar being more evenly retained during the operation of rolling admits of a readier flow of metal between the rolls. Since less motive power is required for rolling the productive capacity is increased.

When rolling channels in a two-high mill, not reversible, by the system indicated by Fig. 7 (which is a drawing of the rolls then used), the bar was taken back after each pass over the rolls, which entailed considerable labor and loss of time. Although by this method smooth bars with accurate section were produced, yet, on account of the low speed of the mill, 35 revolutions per

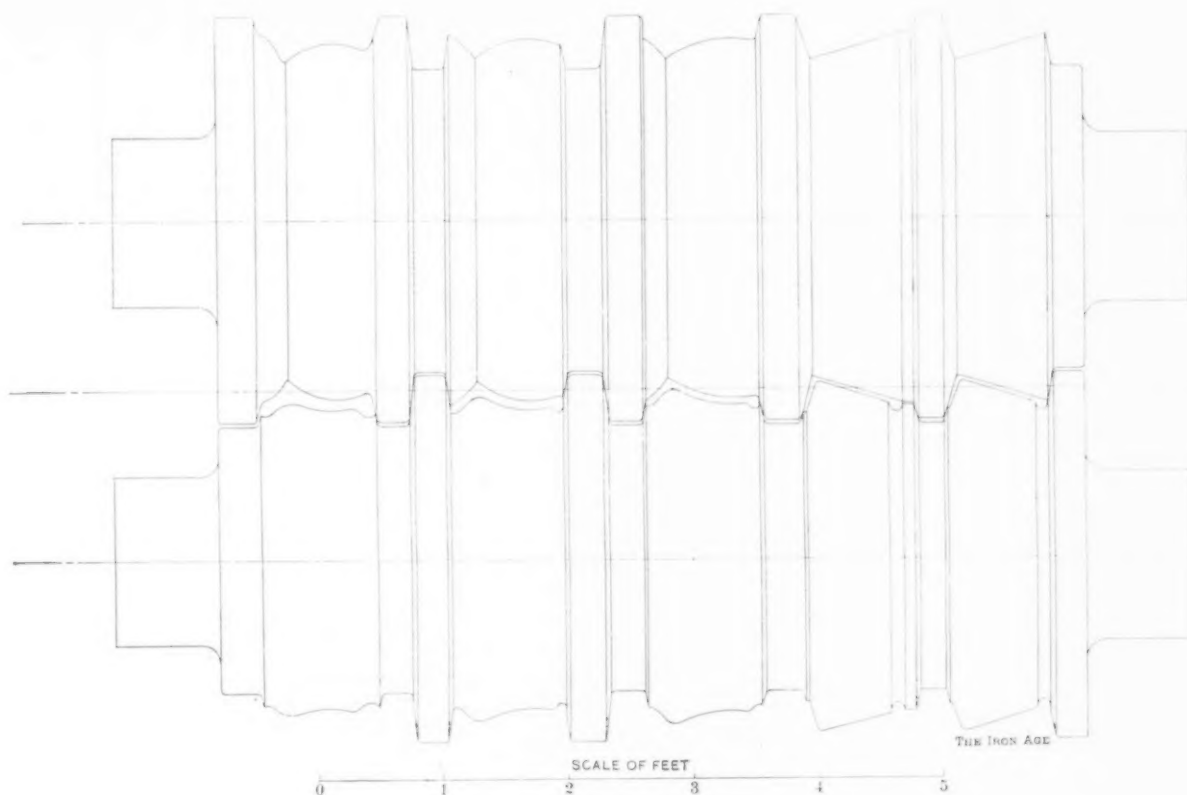


Fig. 5.

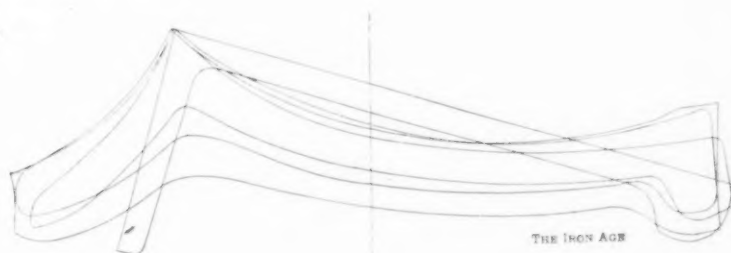


Fig. 5a.

One-third Full Size.

PASSES FOR ROLLING ANGLES.

guides being of the same form as the passes in the bottom roll, the under surface of the bar would, when leaving the rolls, bear equally on all parts. By this method bars 90 to 120 feet long are delivered perfectly straight with accurate section.

For unequal sided angles and large channels this system has many advantages. The edges of the bar having their due proportion of draft, even in the event of the bar cooling in the finishing passes, less trouble will be experienced with twisted bars or defective flanges than with many of the other methods in use. The greatest inequality of draft is in the first pass, when the higher temperature of the bloom admits more readily the displacement of metal. The shape of the following passes allows of more equal distribution of draft, and the tem-

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rolls, the longer side is set at a lesser angle and the shorter at a greater angle in their relation to the axis of the rolls, so that an imaginary line joining the extremities of the angle would be parallel to the axis of the rolls. This position is gradually altered until in the finishing pass the sides are at the same angle in their relation to the axis of the rolls.

It has been observed that with this position of the angle in the finishing pass a greater variety of weight or thickness of angles can be made in one pair of rolls; but in cases where an accurate section is indispensable no system of rolling angles will allow of much variation of thickness in the same passes; for when the rolls are spread apart to increase the thickness of the angle, if the pass is filled, the sides elongate, resulting in inaccurate section. If the passes are not filled, unless the metal is of good quality, the edges of the bar may show defects, on account of the pressure being applied to a considerable extent at the root of the angle, while the extremities receive little or no draft.

It is a practice in some mills, when requiring the same sized angle in different weights or thicknesses, to

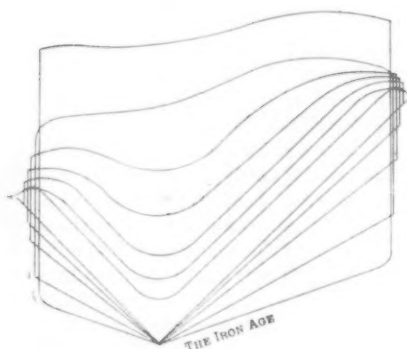


Fig. 2.

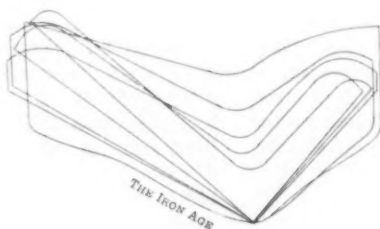


Fig. 3.



Fig. 4.

One-fourth Full Size.

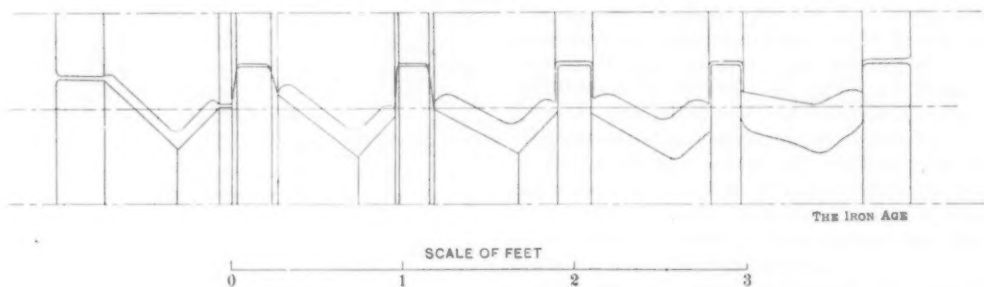


Fig. 3a.

THE SHAPE OF PASSES FOR ROLLING UNEQUAL SIDED ANGLES.

ing, cool more rapidly on the long or thin side; and if when drafting the rolls sufficient allowance had not been made for inequality of temperature, the bar would, when leaving the rolls, curve or deliver sideways; unequal temperature having a similar effect on a bar in the rolls as unequal draft, and if guards or side guides are used to keep it straight (as in practice is generally the case) the bar would twist or buckle on one side.

Figs. 2, 3, 3a and 4 indicate the shape of the passes in the rolls for rolling unequal sided angles as used in a 22-inch train. It will be noted that in Fig. 2 the bar in the second pass is in an inverted position to that of the other six passes—viz., with the inside of the angle downward, the reverse of the other passes, where the point of the angle is in the bottom roll. The working collars forming the sides of the passes are all in the same direction. Any overfilling of the passes at the interstices of the rolls, which would leave a mark or fin, is regulated by the size of the bloom entered into the first pass, and by the beveled corners of the second pass in the bottom roll. The sides of the section are set at the same angle in their relation to the axis of the rolls.

The characteristics of the method shown by Figs. 3 and 3a are similar to that of Fig. 2. The filling of the section is regulated by the shape and size of the bloom entered into the first pass. In setting the passes in the

change the top roll only. Thus the bottom roll is utilized for two or more thicknesses of angles.

Fig. 4 shows the inside of the angle downward, being in reverse position to that in Figs. 2, 3, 3a. By the system, as in Figs. 1 and 5, to prevent overfilling of the passes at the interstices of the rolls, which would leave a mark or fin, the collars are arranged to alternately cover and round the edges of the bar. The diameter of the bottom roll is the same at both extremities of the angle.

Figs. 1, 1a, 5, 5a, 6, 6a and 8, 8a indicate a system of rolling angles and channels adopted in several works in England and Russia. The drawings are from rolls with center or pitch line of $32\frac{1}{2}$ inches, as used in a reversing mill. The ingot, rolled direct, was clogged down to a slab of the required thickness, traversed to the roughing rolls and passed through one forming groove (each section having only one forming groove); thus one pair of roughing rolls was utilized for six different sections of angles and channels, an item of no small importance in a mill required to roll small orders of various sections, through the saving of labor and time when changing rolls. After leaving the clogging the bar is not turned over for succeeding passes; and to prevent any overfilling at the interstices of the rolls, which would leave a mark or fin, the collars are arranged so that the corners

of each side of the bar are alternately covered by one of the rolls.

In general practice, to give control of delivery, the bar is kept well down on the guides resting on the bottom roll. This is done by apportioning the amount of draft over the section together with the diameter of the rolls—viz., the position of the passes in the rolls relative to the center or pitch line. The center line in the drawings shows the position of the passes, with diameter of the rolls, that would keep the bar down on the bottom roll guides and give control of delivery. The

perature of the bar being more evenly retained during the operation of rolling admits of a readier flow of metal between the rolls. Since less motive power is required for rolling the productive capacity is increased.

When rolling channels in a two-high mill, not reversible, by the system indicated by Fig. 7 (which is a drawing of the rolls then used), the bar was taken back after each pass over the rolls, which entailed considerable labor and loss of time. Although by this method smooth bars with accurate section were produced, yet, on account of the low speed of the mill, 35 revolutions per

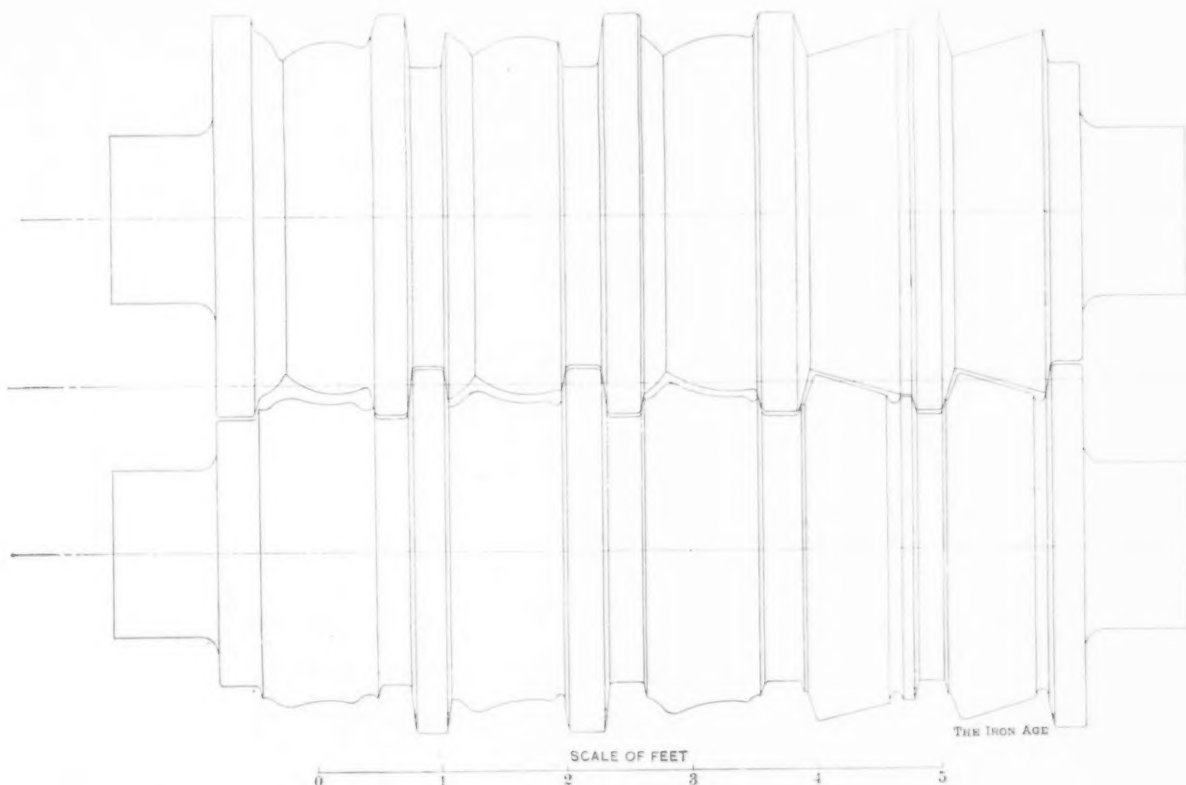


Fig. 5.

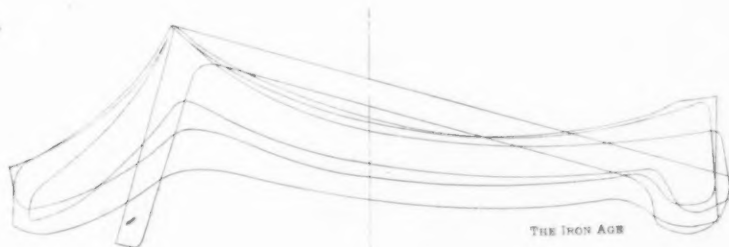


Fig. 5a.

One-third Full Size.

PASSES FOR ROLLING ANGLES.

guides being of the same form as the passes in the bottom roll, the under surface of the bar would, when leaving the rolls, bear equally on all parts. By this method bars 90 to 120 feet long are delivered perfectly straight with accurate section.

For unequal sided angles and large channels this system has many advantages. The edges of the bar having their due proportion of draft, even in the event of the bar cooling in the finishing passes, less trouble will be experienced with twisted bars or defective flanges than with many of the other methods in use. The greatest inequality of draft is in the first pass, when the higher temperature of the bloom admits more readily the displacement of metal. The shape of the following passes allows of more equal distribution of draft, and the tem-

perature of the bar being more evenly retained during the operation of rolling admits of a readier flow of metal between the rolls. Since less motive power is required for rolling the productive capacity is increased. When rolling channels in a two-high mill, not reversible, by the system indicated by Fig. 7 (which is a drawing of the rolls then used), the bar was taken back after each pass over the rolls, which entailed considerable labor and loss of time. Although by this method smooth bars with accurate section were produced, yet, on account of the low speed of the mill, 35 revolutions per

ishing pass; the second, third and fourth passes being in inverse position in the rolls to that shown in Fig. 8—viz., the outer side of the channel was set in the bottom roll. The last pass but one being similar in shape to the third pass in Fig. 8, it was necessary that this pass should be quite accurate before the section was completely formed by straightening in the last or finishing pass (this pass being similar to the fourth pass in Fig.

made the following statements: "The completion of the Pittsburgh, Carnegie & Western line between Jewett and Pittsburgh will open up to the Wheeling & Lake Erie direct access to the large freight tonnage of this territory, giving it a heavy tonnage of coal to the lake and of ore from the lakes to Pittsburgh, with its shipments of manufactured articles to the West. The Pittsburgh inlet will be completed early in 1903. The com-

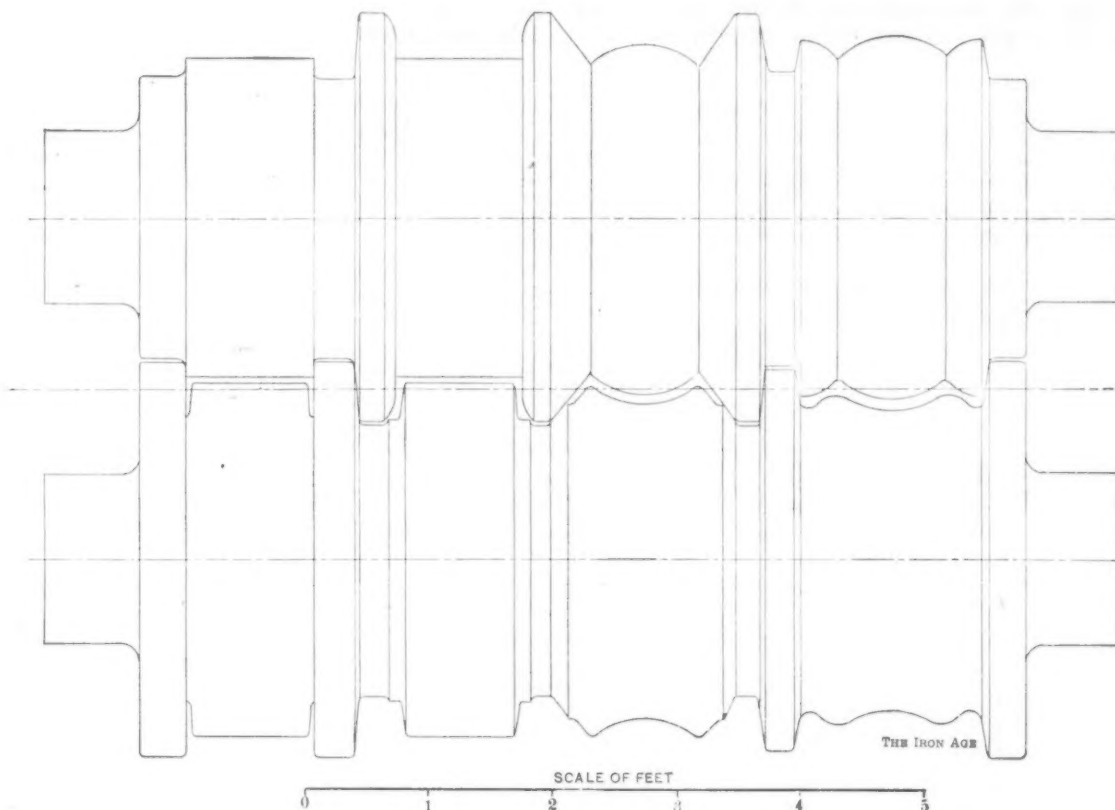


Fig. 6.

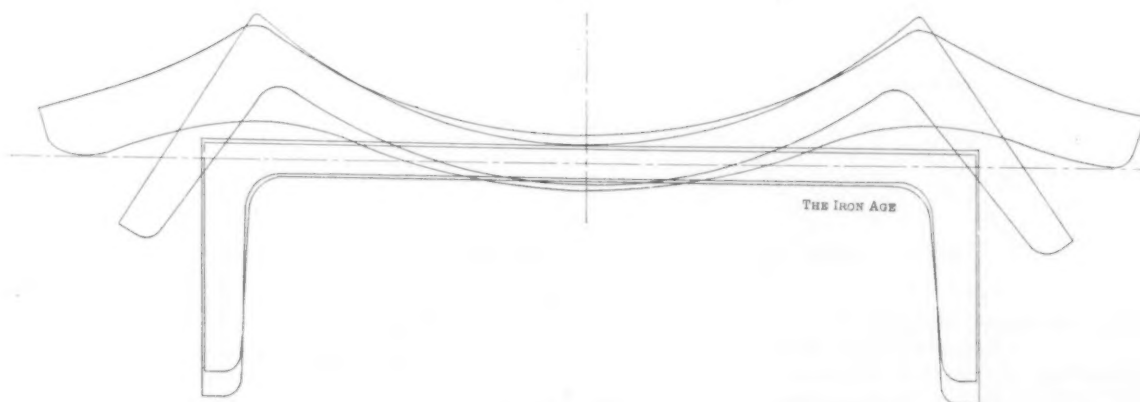


Fig. 6a.

One-third Full Size.

PASSES FOR ROLLING CHANNELS.

8). When first this system was tried some questioned the advisability of straightening and finishing the section in one pass, considering that the form of the last pass but one would not allow the bar to enter the last pass, or that the section would be inaccurate. In practice, however, no difficulties were realized. The web of the bar elongating about 12 inches more than the flanges came first in contact with the rolls, which immediately straightened the end of the section and admitted the bar easily.

Pittsburgh Tonnage for the Wabash Railroad.—In a recent interview with a representative of a St. Louis paper, Joseph Ramsey, president of the Wabash Railroad, which is now building a line into Pittsburgh,

pany are also largely increasing their dock facilities at Huron by the construction of the latest improved coal and ore handling machinery, enlargement of docks and the doubling of track capacity, so that they will be able to handle during the coming season at least double the tonnage to and from vessels that the present machinery will handle. Two branch lines are now in course of construction, which will develop large coal fields and will add, under contract already made, at least 700,000 tons of coal traffic per annum."

Another boat has been chartered to carry Middlesbrough pig iron to America, the steamer being the "Themisto" of Antwerp, the freightage being at 7 shil-

lings for 5000 tons from the Tees to Philadelphia. In addition to the foregoing it is also stated that during

The feeling in England, however, is that this movement is transitory, and British manufacturers and mer-

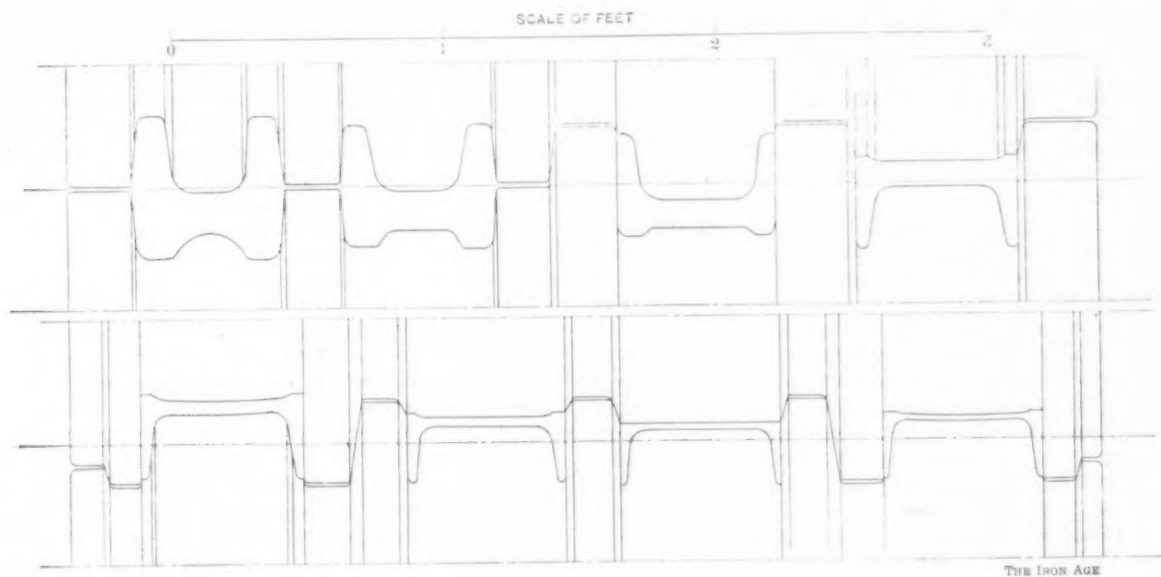


Fig. 7.

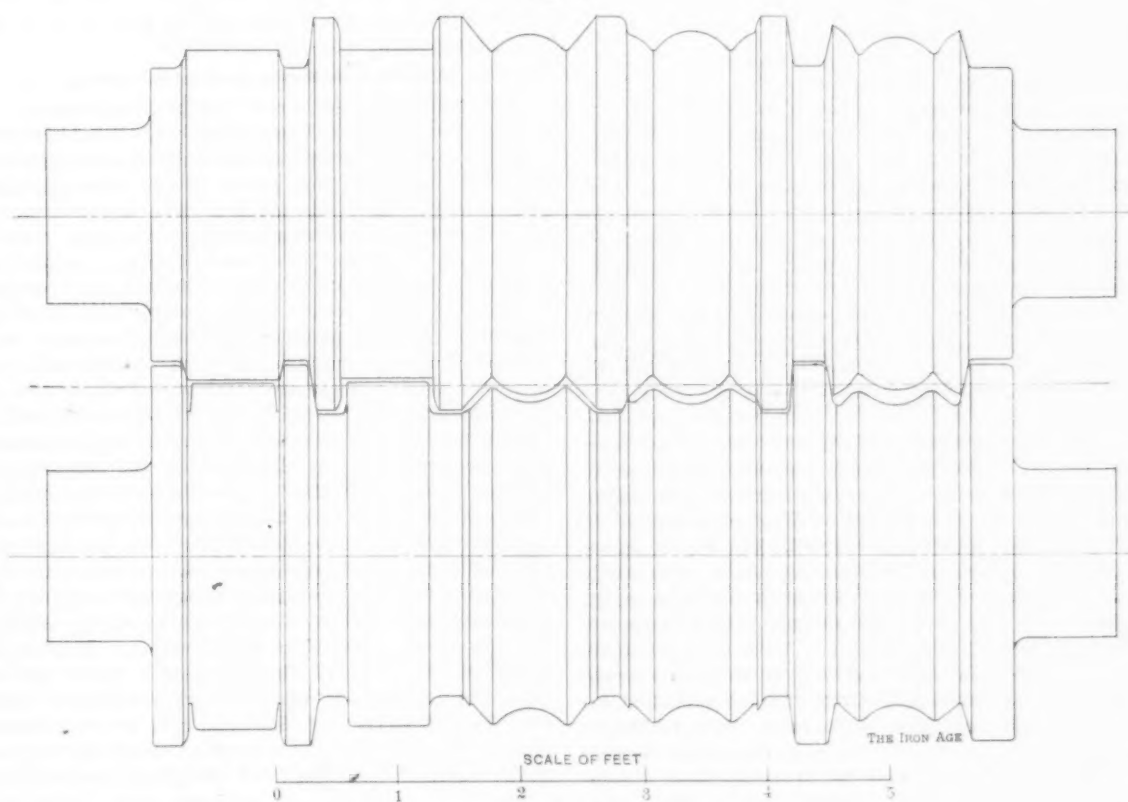


Fig. 8.

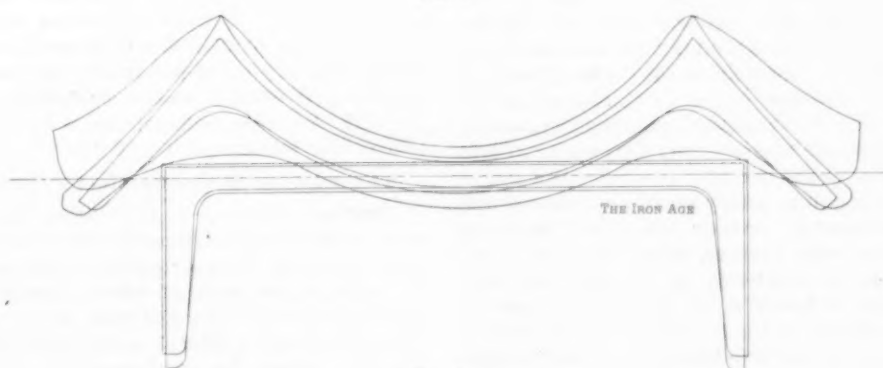


Fig. 8a.

One-third Full Size.

PASSES FOR ROLLING CHANNELS.

the last few days some large orders for steel billets for Canada have been placed in the district of Glasgow.

chants are not putting themselves out of the way to accept offered contracts.

Notes from Great Britain.

Another Combine.

LONDON, March 15, 1902.—Guest, Keen & Co. are insatiable. After various rumors as to a suggested amalgamation with Crawshaw Brothers (Cyfartha), Limited, which have been half admitted and half denied, it is now authoritatively stated that Guest, Keen & Co. have purchased the share capital of the smaller concern. The business will be carried on under the name of Crawshaw Brothers, as before, but the board will be composed in part of the directors of Guest, Keen & Co., Limited. Arthur Keen, in making the announcements, states that the advantages which have been secured by these arrangements are united management and close co-operation of the joint undertakings. He further states that no new capital will be required for the purchase or working of the business. The Cyfartha Iron Works were reconstructed in 1883 at a cost of \$1,000,000 for the manufacture of Bessemer steel. Seven years later the concern were turned into a limited liability company, with a capital of \$3,000,000, and since then various alterations and additions have been made. It will be observed how many and great interests Guest, Keen & Co. now have in South Wales. Cyfartha is near Merthyr, and, of course, within easy access to the sea coast.

Vickers, Sons & Maxim.

The annual report of Vickers, Sons & Maxim is of more than local interest. The balance sheet shows a total profit for the year of \$3,500,000. The reserve fund account, after deducting par value of \$1,100,000 new ordinary shares allotted to shareholders, stands at \$3,300,000. Additions during the year after depreciation amount to \$1,400,000, while interests in subsidiary and connected companies are valued at \$4,430,000. These results are satisfactory, although there has been slackness in some of their branches, particularly the general shipbuilding trade, caused by delays involving increased cost of work due to an accident that occurred in the deepening of the dock sill. There have also been losses on the manufacture of gun mountings, which are ascribed to the initial difficulties of starting a new trade with new workmen in a new place, together with a very large outlay at Barrow-in-Furness on the plant required for this purpose, so that up to the present, instead of being profitable, gun mountings have resulted in serious losses which have been written off out of the profits of the respective years in which they occurred. The report, however, states that these difficulties have now been overcome, and the directors believe that from now on a profit is secured. The year ended with much better prospects in their shipbuilding department. I have in a previous issue referred to this firm's interest in William Beardmore & Co. The directors draw particular attention to two of the firm's subsidiary companies, both acquired during 1901—namely, the Electric & Ordnance Accessories Company, Limited, and the Wolseley Tool & Motor Car Company, Limited, both of Birmingham, and both manufacturing articles that appeal to the individual as well as to the Government or corporation. In the former, together with fuses and small war material, electric fittings of many sorts are made. The latter firm manufacture the Wolseley motor cars, and start the year with most favorable prospects and with orders already on the books that insure full employment till late in the year. These works are now turning out a motor car each day, and it is hoped very shortly to increase the output. It is interesting to bear this latter point in mind, in connection with Vickers, Sons & Maxim, as so many of us are apt to regard them as being interested only in the supply of heavy material for Governments and large corporations. Both Vickers, Sons & Maxim and Guest, Keen & Co. seem to have struck out in quite new directions in thus obtaining control of concerns directly interested in supplying small purchasers. It is only a few weeks ago that I had occasion to report the amalgamation of Nettlefolds, Limited, with Guest, Keen & Co.

The Leeds Forge Company.

The Leeds Forge Company paid a dividend on last year's working of 7 per cent., after writing off \$100,000

for depreciation and putting \$125,000 to the reserve fund. The profit last year amounted to over \$500,000, compared with \$325,000 the year before. The Leeds Forge Company are well known for their rolling stock. The chairman at the annual meeting made some comments upon the possible competition of American rolling stock manufacturers, from which I quote the following: "Touching the general business and operations of the company we have seen from time to time recently numerous statements made as to how the business is conducted by this company as far as wagon making is concerned, and the great probability of us being entirely snuffed out of existence by the enterprise and knowledge of our brethren across the sea. I think, however, I may state that your directors have not seen any cause to give credence to these exaggerated reports which from time to time find their way into the press. The system of railway construction—I mean wagons and rolling stock—will unquestionably undergo a very considerable change in this country, but I think we have sufficient knowledge, and sufficient mechanical skill and sufficiently good establishments outside to enable us to hold our own in the coming struggle. There is a good deal to do, both in the way of railway extension and the replacing of plant, demanded by the present high pressure of railway competition all over the world, but I think we have placed ourselves at the Leeds forge in a most excellent position to meet the demands which may be thrown upon us by the railway companies of the world."

The North Eastern Steel Company.

The North Eastern Steel Company announce a loss of \$73,000 on the year's working. This is accounted for partly by shortness of capital, and accordingly \$1,000,000 worth of preference shares (6 per cent. cumulative) are to be put upon the market. The report states further that there has been scarcity of orders, while excessively low prices have been obtained, coupled with relatively high prices of fuel. There is one paragraph in the report, however, that will probably meet with some criticism. It says: "The result, however, is better than had been anticipated, in view of the serious fall in prices arising from American competition, and from the financial crisis in Germany. Unfortunately this abnormal competition has been chiefly directed against the principal products manufactured by the company—viz., blooms, billets and other forms of partly finished steel. The price of fuel also has, after a fall in the early months, again advanced, and this seriously aggravated the position. Under these circumstances it was found impossible to obtain orders at remunerative prices, or in quantities sufficient to keep the plant fully employed. The directors, foreseeing that partially finished steel products, which were the company's chief specialty, were the forms most open to serious foreign competition, decided some time ago upon a large expenditure in putting down a new mill and altering the works to adapt them for rolling and finishing tramway rails, beams and other forms of sectional steel. These extensions are now practically completed, and the company are in a position to undertake orders which the directors expect will be obtainable at more remunerative prices." If the company could not stand competition with America last year when it was at a minimum, what will they do with American competition when American prices reach their minimum?

The Barrow Hematite Steel Company, Limited.

Another company in difficulties, but in a different way, is the Barrow Hematite Steel Company. The annual report for the year ended December 31 states that the much lower range of prices obtainable for the company's products during the year, as compared with those ruling in the year 1900, has naturally affected to a considerable extent the earnings of the company. The result of the company's operations for the year, after deducting \$119,000 debenture interest, \$51,000 in respect of improvements during the year not properly chargeable to capital, and \$150,000 for depreciation for the year 1901, is a credit balance of \$272,000. Adding to this the \$1,232,000 brought from 1900, there is left at the credit of profit and loss account at December 31, 1901, the sum of \$1,500,000, subject to the depreciation suspense ac-

count. It will be within the recollection of readers of *The Iron Age* that this company have an unfortunate dispute with their preference shareholders. From all appearances they are not likely to reach an immediate settlement; the result is that the profit of \$1,500,000 is not distributed but carried forward. Several conferences have taken place between the company and the committee of preference shareholders. The company want to write down the capital value of the preference shares, while the preference shareholders ask that if this be done the shares should be made preferential as regards capital. The directors demur to this, and by way of settlement propose that, subject to the consent of the shareholders, ordinary and preference, an act of Parliament should be applied for to adjust the company's affairs in the following manner:

1. That the nominal value of the ordinary 6 per cent. preference shares be reduced to £4 10s. per share, and the 8 per cent. preference shares in proportion, the 8 per cent. preference shares to receive the same total yearly amount of dividend as they are entitled to at present—viz., £2262.

2. That the preference dividends in arrears on the unreduced capital to December 31, 1901, be paid as soon as possible after an act of Parliament has been obtained giving effect to this scheme of reduction.

3. That from January 1, 1902, the profits available for dividend shall be applied as follows: *a*, in paying to the 8 per cent. preference shares their cumulative preference dividend of £2262 per annum; *b*, in paying to the 6 per cent. preference shares their cumulative preference dividend on the reduced amount; *c*, in paying to the ordinary shares a noncumulative dividend not exceeding 6 per cent. on their reduced amount, and, *d*, in distributing any balance of profit in the opinion of the directors available for the payment of dividends, ratably between the 6 per cent. preference shares and the ordinary shares.

4. That the preference shareholders be allowed voting power if they desire it.

Since the above proposal assumed shape, the Shareholders' Committee have made counter proposals as follows:

1. The 6 per cent. preference shares to be reduced by not more than £2 10s. each, and the ordinary shares by not less than £2 10s. each.

2. The preference shares to be entitled to a cumulative preferential dividend of 6 per cent. per annum on the reduced amount as from January 1, 1902, and to a further noncumulative dividend at the rate of $\frac{1}{2}$ per cent. for every 1 per cent. paid on the ordinary shares.

3. The arrears of preference dividend to December 31, 1901, to be paid in full.

4. The costs and expenses of the preference Shareholders' Committee to be borne by the company.

5. That, as regards the 8 per cent. preference shares, it is assumed that in any arrangement arrived at the present preferential rights of these shares would be respected.

6. That voting powers be given to the preference shareholders.

7. That the preference Shareholders' Committee be informed not later than the 12th inst. whether the board accept or reject the alternative scheme set out above.

So that matters are still at a deadlock. Would it not be a good plan for some enterprising American to come over and buy up the whole concern?

A Water Tube Boiler Locomotive.

The latest thing over here is a water tube boiler locomotive, running between London and Salisbury. The results are stated to be entirely satisfactory. It has been known for some time past that Dugald Drummond, the locomotive engineer of the London & Southwestern Railway Company, has been putting water tubes across the furnace from side to side of the fire box connecting the water spaces between the inner and outer fire box, and so constructing a sort of combination of water tube and fire box boiler. The results of these tests have been so satisfactory that Dugald Drummond has now gone much further, and has constructed a locomotive boiler which is

practically entirely a water tube. There is first of all an outer shell, in appearance exactly like that of an ordinary locomotive boiler. Inside this there is an inner shell, the axes of the two being parallel, though not concentric. The appearance of this part of the structure is that of a Cornish boiler; but, in place of the furnace being inside the cylindrical part of the boiler, the latter is attached at its rear end to a fire box, which thus forms the furnace part, as in an ordinary locomotive. It remains to explain the arrangement of water tubes. A certain number of these, say about 40, are in the fire box, as already explained; the remaining tubes cross the space inclosed by the inner cylindrical shell (really a flue), being placed at angles sufficiently inclined from the horizontal to insure circulation of the water within them. It will thus be seen that these water tubes are in the stream of flame and hot gases that passes from the fire box at one end of the boiler to the smoke box at the opposite end, their axes being at right angles to the flow of gases. As they slope in opposite directions with varying angles, a kind of trellis work is exhibited in elevation, or when looking from end to end of the inner shell or flue, as one can when the smoke box door is open. This allows the tubes to be cleaned on the outside, and any ashes that may remain in the bottom of the flue to be removed.

Indian Rolling Stock.

There is a curious paragraph in a Calcutta paper, *Capital*, in which strong objection is taken to the placing of an order for rolling stock in Great Britain. The reason advanced is that Indian manufacturers can make their own rolling stock. The writer in this paper says: "The Chamber of Commerce are circulating to the members a statement that Mr. Burt has been authorized to order from home 750 railway wagons for the Eastern Bengal Railway. I am tempted to inquire why this order should be sent home. Jessop & Co., Burn & Co., and I believe other firms as well, have extensive plant for the manufacture of railway carriages, and I really fail to see why this order should go by them, when they would probably execute it at considerably less price and time than home firms."

Coal and Railways in South Africa.

Some time ago I drew the attention of your readers to the discovery of the Wankie coal fields, and the probability of a railway soon reaching there. At a meeting of the Rhodesia Railways Trust, Limited, held this week, the chairman announced that the next extension of the railway would be from Bulawayo to the Wankie coal fields, and further expressed the opinion that this could not fail to have a most important effect upon the trade and commerce of the district. The coal at Wankie has been proved to exist in practically inexhaustible quantities, and the experts from Cardiff affirm that it is only slightly inferior to Welsh coal. It is thought that in about 18 months the present line will be completed. The Railway Company have secured terms from the coal company for supplies at the pit's mouth at a little over cost price, so that all lines in Rhodesia will soon be worked very economically so far as fuel is concerned. When the railway line has reached the Wankie coal fields, it will be pushed on a distance of about 75 miles to the Victoria Falls on the Zambesi, and thence it will be continued northward. A township is to be established at Victoria Falls, and a bridge is to be built across the Zambesi of one span 600 feet in length and about 400 feet above the water, over a narrow gorge through which the river flows at this point. Beyond the Zambesi it is proposed to push the line through the headquarters of Northwestern Rhodesia and to tap the district in which are situated the claims of the Northern Copper Company. The chairman of the Railway Company says that this copper field has very promising prospects. It is about 150 miles northeast of the Victoria Falls, and is on the direct route which the railway would follow in any event. If only peace could come to South Africa, railway developments are practically interminable.

Iron Trade Revival.

There is a distinct revival in the iron trade over here. Consumers are at the moment anxious to obtain sup-

plies. Sir Benjamin Hingley, the Midland ironmaster, is quite cheery as to the future. He says that British iron is still preferred in all parts of the world, and that if customers can get it at something like the price of that of other countries, it will be preferred to American or any other kind. Sir Benjamin Hingley always is optimistic when there is no particular danger. It is interesting to observe how the present shortage of raw material in America is making everybody over here as cheerful as crickets. Indeed, I think the old British phlegm is dying out, and English buyers are quite as vivacious over market fluctuations as anybody else.

A Big Combine.

A trade combine which must in the long run directly affect American interests has been practically consummated this week. Five firms, all connected more or less directly with the production of tin plates, sheet iron and steel, have amalgamated. They are: 1, E. P. & W. Baldwin (Limited), who have sheet and tin plate works at Wilden, near Stourport, at Swindon, near Dudley; the Stour Vale Sheet Mills, Kidderminster, and the Cookley Mills, Brierley Hill, the two latter recently acquired from Knight & Crowther (Limited); 2, Wright, Butler & Co. (Limited), Elba Steel Works, Gowerton; Landore blast furnaces and steel works, near Swansea; Cwm Avon Iron & Steel Works, Port Talbot; Primitiva and Monges iron ore mines, in Spain and Portugal, and the Aberdeen Colliery, Port Talbot; 3, the Bryn Navigation Colliery, near Port Talbot; 4, Alfred Baldwin & Co. (Limited), Panteg and Pontypool steel works and sheet galvanizing works; and, 5, the Blackwall Galvanized Iron Company (Limited), Blackwall. This amalgamation has been arranged for the purpose of consolidating the different interests. The directors of the new company are Alfred Baldwin, M.P., Roger Beck, John Roper Wright, Isaac Butler, Stanley Baldwin and S. Lammas Dore. The capital of the united concern is fixed at \$5,000,000, and it is proposed to issue to the public only 4½ per cent. debentures and 5 per cent. preference shares. The new concern will be known as Baldwins, Limited. One of the predominant reasons for this amalgamation is the intention to compete with foreign rivals. There is no reason why this should not be successfully done, inasmuch as the new concern will own their own collieries and will have nothing to fear from that *bête noir*, high priced fuel.

S. G. H.

New Publications.

The Iron and Steel Works of the United States, 1901. Compiled and published by the American Iron and Steel Association, Philadelphia. Price, \$10.

Probably never during the many years that the iron trade has been taught to turn to the directory compiled by the American Iron and Steel Association has the need of it been so keenly felt as during the last two years. It has been a period of such radical changes that the older edition had become of very little use, and many in the trade were impatiently waiting for the new edition. We can fully realize what an enormous amount of work was involved in compiling the latest volume, and that the necessity for painstaking revision brought about annoying delays. The general features of the directory, with its wealth of detailed information, are too well known in the iron trade to call even for brief descriptive remarks. A departure from the older system has been made in some respects, forced by circumstances, and, we doubt not, adopted after the most careful consideration. There have been segregated from the general mass of iron works upward of 30 concerns who have been gathered under the general heading of "chiefly consolidations." We believe that to have been a good plan with what really are consolidations, like the United States Steel Corporation, the Republic Iron & Steel Company, the National Stamping & Enameling Company, the Crucible Steel Company of America, &c. But we must confess that we do not quite understand the considerations which put into this group such works as the Troy Steel Company, the Reading Iron Company, the Thomas Iron Company, when there are in the general list, say, Worth Bros. Company or the Central Iron

& Steel Company, or the Oliver Iron & Steel Company or the Otis Steel Company or the La Belle Iron Works. Of course, the different plants of the companies segregated in the first part are enumerated in their place in the general directory, but by taking out of the list what seem to be to us an unnecessary number of concerns the reader is forced to make a somewhat longer search.

A good illustration of how rapid have been the changes of late is furnished by the fact that a part of the report consists of 13 pages of "Latest Information."

Methods of Iron Analysis. By Francis C. Phillips. Published by the Chemical Publishing Company, Easton, Pa. Price, \$1.

Some years since the chemical section of the Engineers' Society of Western Pennsylvania collected reports from the chemists of the leading steel works in the Pittsburgh district on the methods in use in their laboratories. These were subsequently published in book form, and now a second edition, edited by Francis C. Phillips, has been issued, to which a series of contributions have been added. The original series included reports from C. B. Murray, J. C. Barrett, Robert Miller, Frederick Crabtree, H. E. Diller, G. O. Loeffler, J. U. Camp, A. L. Cromlish, A. B. Harrison, R. B. Carnahan, H. L. Brinker, F. G. Brinker, F. S. Hyde, A. G. McKenna, George C. Gloss, C. E. Meanby, C. M. Johnson, W. H. Ginder, Henry S. Marsh, George E. Hedge and G. D. Chamberlain. The appendix to the present volume has descriptions of special methods by James M. Camp, A. G. McKenna, A. B. Harrison and James O. Handy.

In view of the special requirements, notably as to rapid work, which works the chemist must endeavor to meet, the collection in the volume before us is a specially valuable addition to every laboratory of an iron or steel plant. The book before us is an excellent example of co-operative effort and reflects great credit upon the chemists named and upon the editor.

American Standard Specifications for Steel. By Albert Ladd Colby, South Bethlehem, Pa. Price, \$1.10.

Mr. Colby, who needs no introduction to the readers of *The Iron Age*, has done the consumers and the makers of rolled iron and steel a very great service in publishing his little book on steel specifications. During the past few years a very large amount of earnest work has been put into the drawing up of standard specifications, and splendid progress has been made. Mr. Colby has reprinted in an appendix the text of the specifications adopted by the American section of the International Association for Testing Materials on August 10, 1901. The body of the work is a critical review of these specifications in the framing of which Mr. Colby took an active part. He presents in clear language and in a convincing manner the reasons which governed the committee in reading its decisions. He begins with a general review of the requirements specified in the standard specifications, and in a second chapter reviews each of the nine specifications adopted which embrace steel castings, axles, forgings, tires, rails, splice bars, structural steel for buildings, structural steel for bridges and ships and open hearth boiler plate and rivet steel. Of course, these do not cover every specific purpose, but they will serve for the majority of uses to which steel is applied, and can be modified to suit particular requirements without departing materially from the standard form and practice recommended. Feeling convinced of the vast importance of the work done in this direction we welcome Mr. Colby's latest contribution as likely to prove a powerful aid in promoting the objects of the movement which ultimately must become international.

Saw Filing. By Robert Grimshaw. Publishers, Norman W. Henley & Co., 132 Nassau street, New York, 1901. Price, \$1.

This little book of 93 pages is written for practical men. It is a treatise on filing, gumming, swaging, hammering, the brazing of band saws, and the speed work

of and power required to run circular saws. It is designed for those who use saws for any purpose. The book is not divided into chapters, but is written as a series of paragraphs with a heading for each, there being about 43 such paragraphs, and all are set down in a table of contents. The book is well illustrated, but the cuts are not as well arranged as they might be; for instance, Fig. 30 is shown on page 38, while Figs. 31 and 32, taking up exactly as much space, are shown on the following page. This sort of arrangement is noticeable once or twice in the book and leads to some confusion in finding the figures. The subject matter is good, though presented in a somewhat colloquial style. A useful hint for the saw user is contained in the advice, "The first 6 or 8 inches at the point of a hand rip saw may be given 'cross cut' pitch, with which you can cut through knots without changing saws." Several manufactured devices for filing, gumming, setting and swaging are here explained. In this edition the author solicits from practical sawyers and others questions, suggestions and further information bearing on the subject, for use in future editions. The work is up to date and practical.

Metallurgy of Cast Iron. Third edition. By Thomas D. West. Cleveland Printing & Publishing Company, Cleveland, Ohio. Price, \$3.

Some years since we had occasion to review "West's Metallurgy of Cast Iron" and then entered a protest against some of the queer metallurgical lore with which it abounded. We are glad to state in the new edition the glaring errors of the earlier work have been eliminated, and the blemishes which disfigured it have well nigh disappeared. Mr. West has been a practical man, brought up in the school of experience, but has much of the fondness of men of that type for theorizing. He is at his best when he communicates in plain language what his own work has taught him, but finds himself on thin ice when he ventures upon fields for which he has neither the aptitude nor the training. To him the dangerous ground is when he attempts to tell his reader about the practice and the theory of the blast furnace. In the present edition he has not entirely escaped these perils, but as we have already stated, the serious blunders have disappeared and what flaws there are cannot do much harm to the innocent outsider.

When it comes to Mr. West's own particular field, that of the iron founder, he is a safe guide and an instructive writer. He is exceedingly industrious, and one has the feeling that the mass of his accumulations rather overpowers him. One might be inclined to wish that he would condense more and rearrange his matter with more skill, but after all it might be urged with justice that those who use his work want to have all the data together rather than be forced to hunt over the enormous mass of latter day technical literature. Still, Mr. West might well exercise more freely his rights as an author of critical selection.

While Mr. West's book has not yet attained the ideal work of its class, still it is now a very useful book which one may now recommend with much less reserve than formerly.

Cast Iron: A Record of Original Research. By William J. Keep. Published by John Wiley & Sons, New York. Price, cloth, \$2.50.

William J. Keep of Detroit has done an enormous amount of original research work in connection with cast iron. His elaborate papers have been printed from time to time in the transaction of the American Institute of Mining Engineers and of the American Society of Mechanical Engineers. Mr. Keep having been a member of the Committee on Standard Tests and Methods of Testing Materials. Mr. Keep's records of experiments have been scattered in the volumes of these and other learned bodies so that this work in which they have been collected, rearranged and supplemented will be welcome to many merely as a matter of convenience. The work is thoroughly scholarly, and yet scattered through it there is a good deal of valuable information for the practical worker in cast iron.

Mr. Keep seems to give Prof. Thomas Turner of Bir-

mingham credit for having discovered that the condition of carbon in cast iron depends upon the action of silicon. We believe that he is in error in this, since the splendid investigations made before that time by a committee of experts when the German duty on foreign pig iron was under discussion fully established that and other facts which were since rediscovered.

Mr. Keep begins with clear cut definitions of terms. One of them, that on wrought iron, is rather generally put, and is not quite accurate. Mr. Keep says that wrought iron "is made up of fibers interspersed with more or less slag, which has been practically squeezed, forged or rolled out." What slag has remained has certainly not been squeezed out. He adds, "It is therefore not only chemically impure, but it has imperfections mechanically intermixed." As a matter of fact, the particles of iron themselves are exceptionally pure in wrought iron.

Mr. Keep has had one excellent idea which unfortunately he has not carried out further. Following the preface he has summarized the best methods of using the shrinkage test. We believe that many of his readers would have welcomed the plan of briefly summarizing in this manner many other similar directions and suggestions.

The Eight-Hour Law.

WASHINGTON, D. C., March 25, 1902.—The House Committee on Labor, which concluded the hearings on the pending eight-hour bill on the 18th inst., and which it was thought would promptly make a favorable report upon the measure, devoted the entire period of its meeting on the 20th inst. to an unsuccessful attempt to so amend the bill as to exempt from its provisions certain classes of emergencies likely to be encountered in the manufacture of articles or materials for the Government. The committee is likely to consume one or more additional meetings in reaching a conclusion on this point, and the bill will probably not be reported to the House before April 1.

It was not the original intention of the committee to add anything to the emergency provisions of the bill which in their present form are as follows:

"The proper official on behalf of the United States, any Territory, or the District of Columbia, may waive the provisions and stipulations in this act provided for, as to contracts for military or naval works or supplies during time of war or a time when war is imminent. No penalties shall be executed for violations of such provisions due to extraordinary emergency caused by fire, flood or danger to life or property."

It will be noted that these exemptions cover merely war emergencies and those involving danger to life or property, and do not include any generally recognized mechanical emergencies which have been so fully described by Archibald Johnston of the Bethlehem Steel Company, and A. C. Dinkey of the Carnegie Steel Company. The testimony of these gentlemen, which stands uncontradicted by any competent witness, has made a very deep impression upon the minds of certain members of the committee, including Chairman Gardner, and it is now an open question whether a majority can be secured for the bill in its present form. The question as to how it can be amended so as to meet the objections that have been raised without rendering it wholly unacceptable to the labor element, in whose interest it has been drawn, is the problem to which the committee is now giving very close attention.

Amendments Proposed.

It need hardly be said that the bill in its entirety is obnoxious to those manufacturers who have contracts with the Government; but while they entertain the hope that it will not become a law, they have gone so far as to suggest to the committee certain amendments designed to mitigate the injury that it is believed would result from the enforcement of the measure. It is proposed, in the first place, to so amend the bill that its prohibitions shall be limited to forbidding manufacturers to "require" their employees to work more than eight hours in one calendar day, and that the provision forbidding employers from "permitting" such employees to work

as many hours as they may desire shall be stricken out. It is not surprising that President Gompers, who is the representative of organized labor before the committee, opposes this change, which, in his opinion, would nullify the entire measure, for it is an interesting and a highly significant fact that the labor leaders have reached the conclusion that an eight-hour day cannot be made universal so long as the laboring man has the option of working overtime for extra pay, even though his employer should be deprived of all power to compel him to work. Mr. Gompers is not willing to trust the laboring man to limit his own hours of employment, but proposed, by penal statute, to bring the workmen of the entire country to an eight-hour day without regard to the ability or inclination of the individual.

The opponents of the bill have given much attention to the framing of an emergency clause which would exempt from the provisions of the bill such mechanical operations as plainly cannot be carried on upon an eight-hour basis without material loss in quality, to say nothing of expense. No attempt has been made to cover every line of industry, but so far as iron and steel are concerned, it has been suggested that an amendment be incorporated to exempt "the manufacture of materials of the best grade or quality, as are produced under continuous operation, or where better mechanical or manufacturing results shall be obtained by working laborers more than eight hours in any one calendar day."

The necessity for such a provision as that suggested to the committee is generally conceded. Ex-President Garland of the Amalgamated Association of Iron and Steel Workers, who testified before the committee a week ago in favor of the bill, admitted very frankly that an emergency clause should be incorporated in the bill, and expressed considerable surprise that this had not been done by those who drafted the measure. He cited the fact that in many steel plants it is necessary for the last shift on Saturday to work overtime to dispose of all melted metal, and added that he could see no reason for objecting to the exemption of emergencies of all kinds.

Mr. Gompers, however, proposes to stand by the bill in its present form, and declares that the efficiency of the measure would be wholly destroyed if provision is made for any emergencies except those of war and of danger to life and property. He asserts that manufacturers can adjust themselves so as to avoid emergencies, but that they will not do so unless compelled to by law. He does not undertake to meet the evidence before the committee further than to produce testimony to show that in the production of ordinary commercial material, blast furnaces and other branches of iron and steel making are conducted on a plan which permits the transfer of certain processes from one shift of men to another. The refinements of the industry he does not attempt to discuss, and his witnesses claim no knowledge concerning them. Several members of the House Committee, however, are very favorably disposed toward the emergency clause above quoted, and a strong effort will be made to incorporate it into the bill, although the outlook hardly justifies hope of complete success.

The third amendment of the bill proposed by its opponents is based upon the important difference between the scope of this measure and that of the existing eight-hour law of August 1, 1892, which provides that the "service and employment of all laborers who are now or may hereafter be employed by the Government of the United States, by the District of Columbia, or by any contractor or subcontractor, upon any public works of the United States or of said District, is hereby limited and restricted to eight hours in any one calendar day." In commenting upon this law in the course of an argument before the committee during the past week, Judge McCammon, representing the Carnegie Steel Company, said:

"It will be noticed that the labor treated of is on the public works of the United States. The term 'public works' is well understood as not meaning all fixed works built by civil engineers for public uses, as railroads, canals, water courses, roads, &c., but strictly military and civil works, constructed at the public cost. There are other public works than those specified, but

they all possess the characteristics common to those particularly described. These characteristics, which are essential attributes, are: 1, That all relate to the improvement, construction or preservation of realty, easements or fixtures appurtenant to them; 2, that all are of a fixed nature and permanent; and, 3, that the title to, or the ownership of, the property described is vested in the Government, and does not merely pass to it upon the completion of the work or upon its being accepted by the Government."

As it is clear under a number of decisions of the highest court that the title to such articles or materials as are manufactured for the Government in private establishments, whether under contract or otherwise, does not pass to the United States until the completion and acceptance thereof, it is proposed to add a new section to the pending bill to read as follows:

"That nothing in this act shall apply to contracts where the title to any article or material contracted for does not vest in the United States until delivery and acceptance thereof."

The opponents of the bill concede that the enforcement of an eight-hour law on public works is within the proper scope of legislative action. The subject matter is wholly within Governmental control and the operation of the eight-hour law does not interfere with any private interest and no citizen suffers thereby, except possibly the mechanic, whose hours of labor, and possibly his wages, are curtailed to his injury. Congress has no power, however, it is contended, to fix the hours of labor in private establishments either directly or under color of a contract. The power to regulate the hours of labor in the States has been held by the courts to be a police power which the States have never surrendered to the Federal Government, but constantly avail themselves of it, enacting laws restricting the hours of labor, which usually are suited to local conditions such as climate and the nature of the work named. In this connection it was pointed out in the argument before the committee that the United States Supreme Court in the case of *Connolly vs. the Union Sewer Pipe Company*, in which the court held the anti-trust law of Illinois to be unconstitutional, stated that "the police powers of the States were not included in the grants of power to the general Government, and therefore were reserved to the States when the Constitution was ordained."

Should the pending bill be favorably reported by April 1, as now seems likely, it is possible that the House Committee on Rules will grant a special order for its consideration at an early date, and that the bill will be acted upon in time to reach the Senate before May 1, should it be passed by the House. W. L. C.

The American Sheet Steel Company Wage Agreement.—The wage agreement recently made between the officials of the Amalgamated Association and the American Sheet Steel Company is as follows: "This agreement, made this 15th day of March, 1902, by and between the American Sheet Steel Company and the Amalgamated Association of Iron, Steel and Tin Workers, witnesseth: That from this date until July 1, 1903, there shall be no change in the present scale of wages, and there shall be no cessation of work by the members of the Amalgamated Association of Iron, Steel and Tin Workers, and there shall be no conferences held at the request of either party; and it is further agreed that clause 3, page 26, and clause 15, page 30, of the present scale be discussed and arranged in conference at an early date."

The National Association of Blast Furnace Employees have notified not only all the blast furnace operators in the Mahoning and Shenango valleys, but in the Pittsburgh district as well, and also in other sections in the Central West, that on and after May 1 the men will demand an eight-hour day, instead of 12 hours, as at present, with the same rate of wage that is now in force. It can be stated that the blast furnace owners will absolutely refuse this demand of the men, claiming it is impossible to grant it. Should both sides maintain their present positions in the matter trouble among blast furnace labor on May 1 is not improbable.

The Iron Age

New York, Thursday, March 27, 1902.

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| DAVID WILLIAMS COMPANY, | - - - - - | PUBLISHERS. |
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| RICHARD R. WILLIAMS, | - - - - - | HARDWARE EDITOR. |
| JOHN S. KING, | - - - - - | BUSINESS MANAGER. |

The Pittsburgh office of *The Iron Age*, Robert A. Walker, manager, will be removed on April 1 from rooms 509 and 510 Hamilton Building to room 1201 Park Building.

The American Plan.

When foreigners come to this country they apparently bring with them their native lands, and the conviction that the *modus vivendi* hinges upon methods in vogue in their own countries, without doubting whether they comprehend the question as it concerns us. Persons who have lived under monarchical or alleged democratic institutions (where the controlling voice is that of one man) are gravely concerned for the permanency of our form of government when they see it in action, vaguely understanding that we have no potencies, but reserve to ourselves the right to instruct our law makers or call them down when they begin to act as if they were irresponsible individuals and held a lien upon us. Foreign visitors are surprised when given the same privileges we possess of going to any part of the country unmolested by police supervision, passports or interference of any kind; this is so subversive that we are in danger of lapsing into anarchy or socialism at no distant day. These vagarious visitors take themselves very seriously, indeed, and when they return to their native lands put themselves to the trouble of editing their crude observations for publication in the full belief that they have contributed to contemporaneous history. It never occurs to any of them that they are not fitted for the post of historians, or even of correct reporters of the customs of any country, not even their own, much less foreign lands, either by education or natural selection; observers are the result of aptitude and careful training, but every odd man out for a holiday has a note book, and hopes to reimburse himself for the cost of his jaunt by printing the contents of it.

If the "chief who is takin' notes" has a more or less superficial knowledge of some workshop methods in his own country he naturally gravitates to similar shops here, but our systems do not excite his admiration, and it delights him beyond measure when he can find here and there a fellow countryman among our men. It is no longer wonderful that we have achieved eminence, for we have hired, at large wages, foreign workmen to initiate us into the mysteries of any given trade. The foreign observer does not see that if this was the case we should be in the same position that his people are, and that Europeans are hired solely for their brawn and muscle, which is set to turning out material upon American plans and systems. We have rung out the old and rung in the new, and have no use for the man of precedent and mechanical creeds long outworn.

Every year there are dumped upon our shores foreign scraps of humanity from all over the world. In this city we have a national clearing house on Ellis Island, which sorts all this scrap into "best selected." The remainder, for which we have no use, is returned to the shippers with instructions not to send any more of it, and the shippers have to pay return charges as a pen-

alty for their carelessness. This "best selected" is, after it has sworn allegiance to the country, worked up into American citizens, but they are no longer foreign workmen, for they have shed their industrial skins and the tricks and manners of the trades that were taught them in their own countries, doing twice as much of a better quality than they ever did before. Under the American plan of making useful citizens it makes no difference whatever where the scrap comes from, whether India, Ireland, Scotland, Wales, Borneo or other lands innumerable—with the sole exception of China. These people are in trade parlance "red short," and will not weld or amalgamate with our customs; we put a ban on them as regards their citizenship. So if by happy chance visitors to these shores discover compatriots in our steel mills they should ascertain if they can whether they have taught us their plans of doing work or whether they are under instruction in ours. In every instance the latter will be the case.

It is not to be wondered at that foreigners should fail to grasp the significance of our advance, or arrive at a solution of the American riddle, for that is what it is to them. For years they have regarded us as an experiment; but now, when it has ceased to be that, when we have survived the severest shocks of internecine war—the most fearful of all appeals to arms—when we present to the rest of the world a spectacle of a perfect autonomy, impregnable at all points, it is in no wise surprising that they should misapprehend the causes which led up to it; they never will understand them until they go through the same experience themselves.

Emergency Bank Currency.

No one feature has done so much to create financial panics and aggravate commercial depression as the calling in of loans and the hoarding of money; the reduction in the volume of available currency when the need of it is greatest. And yet there must be some restriction upon the issue of bank notes, and if there is a restriction the difficulty of getting money increases as the limit is approached. It must not be too sharp and immovable. The relief afforded in London by the suspension, or the promised suspension, of the Bank act, which limits the amount of notes which the Bank of England can issue, has led some persons to infer that there ought to be no restriction at all. It might as sensibly be argued that stimulants ought to be used freely at all times because they are invaluable in emergencies.

Banks are at the same time debtors and creditors. In the first half of the nineteenth century their practice was to call in their loans as soon as there were signs of an approaching storm, in order to be able to meet the demands of the debtors. By calling in their loans they wrecked solvent customers who were temporarily embarrassed because those who owed them were unable to pay. The occasion was one that required the banks to lend more freely than ever, upon good security; but the banks loaned less money than usual because deposits were withdrawn from them and hoarded by men who were afraid that if they did not at once get hold of their money they would not get hold of it later.

In the latter half of the century a change occurred on each side of the ocean. In England the volume of bank notes was restricted, but on emergencies the Government authorized the Bank of England to go on loaning after the statutory line was reached. The knowledge that money could be obtained allayed the panic immediately; concerns that were really insolvent failed, but solvent merchants were not ruined by the action of

banks in calling in their loans. In this country there gradually grew up the practice that the banks in a great city pooled their assets, so to speak. The Clearing House issued certificates to their members upon the deposit of securities, which certificates constituted a new sort of currency. It was issued in the emergency when the inability of some men to pay their debts and the hoarding of currency by others created a special need for additional currency. The effect of panics has been greatly mitigated in this country, where it has become a maxim that a solvent concern must not be allowed to fail, and in London there has never been a repetition of the panic of 1866, though there have been years of bad business and brief periods of excitement in strictly financial circles.

The National Bank act in this country is much less rigid than is usually supposed. It is frequently stated that banks are forbidden to loan after they have reached the limit of their legal minimum reserve, but this is not correct; it is discretionary with the Comptroller and the Secretary to proceed against a bank that permits its reserve to remain below the legal minimum. It is not an uncommon thing for the reserve to drop momentarily below the minimum, and in the summer of 1893 the reserve of the New York banks was below the minimum continuously for more than two months. To allow this is analogous to the suspension of the Bank act in England. It permits an exceptional increase of the currency at an exceptional time.

One of the most important features of the currency bill reported by Mr. Fowler for the Committee on Banking and Currency is the provision that with the permission of the Board of Control, which it is proposed to substitute for the Comptroller, the banks may issue, in addition to the notes otherwise authorized, an amount equal to 20 per cent. of their capital, subject to a tax of 1½ per cent. each half year. Banks will not issue notes subject to a tax of 3 per cent. per annum unless there is an especial need, as indicated by the rates paid in the money market, nor will they keep out notes subject to such a tax after the rates return to a normal level. But this provision would assure merchants who could not collect moneys due to them that they could borrow at a high but not a famine price money enough to enable them to meet their obligations. Such a provision would go far to make a panic impossible.

Responsibility of the British Trade Unions.

Since the decision of the House of Lords was rendered in the cases taken before it on appeal, by which the principle was established that a union may be sued, and that its funds are attachable in satisfaction of any judgments which may be secured against it for damages done or injuries inflicted by it or its members in furtherance of its objects and purposes, the best talent in the ranks of the trade unions has been employed in devising some scheme by which they can put themselves beyond the reach of the law. The plan at first advocated was to transfer the funds in the union treasuries over to France, where they would be beyond the jurisdiction of the British courts. Agents were sent to the Continent to arrange for such transfer, and reported that they had done so. For some reason, however, the idea did not commend itself to the membership of the unions. It may be that if the funds of the unions were put beyond the jurisdiction of the British courts the custodians of such funds would enjoy the same advantage. Should they be misappropriated there would be no chance to proceed against the defaulter in the English

courts, even if he were caught on English soil. It is a well established principle in common law that a plaintiff in equity cannot take advantage of his own wrong doing, and this principle would apply even more strongly in criminal than in civil prosecutions. If the unions sent their funds abroad so as to place them beyond the reach of judgments granted by the English courts there is very little reason to suppose that these courts would very seriously entertain complaints that they had been misappropriated. Even the fact of misappropriation could not very well be established, since such accounting as the courts of Great Britain might order could not be verified, unless the person upon whom such order was issued might choose to verify it. This gave opportunity for grave complications. The British workingman naturally has a preference for spending his own money, or at least having a voice in deciding how it shall be spent; and it may be he has not such unlimited confidence in his leaders as would induce him to consent that the union funds to which he has contributed of his wages shall be taken to Paris, where the opportunities for spending them in riotous living and in other ways are so good and the chances of satisfaction so small.

Having negatived this proposition, the workingman waited for another which should be more acceptable. He now has it in a bill which has been introduced into the House of Commons, in support of which he is marshaling what influence he can command—which under present conditions is not great. This extraordinary measure provides that no action or legal proceeding shall lie against a trade union for any wrongful act committed by any officer, trustee, servant or agent in furtherance of a strike, lockout or other dispute between workmen and employers unless it be proved that the council or other governing body of the union expressly authorized it or were privy to it. This is a reasonably audacious demand, and it is scarcely probable it would have been made if any other way of evading the consequences of the decision of the Law Lords putting the unions on the same plane as corporations could have been found. After all, the responsibility imposed upon the unions by the *Taff Vale* and *Quinn vs. Latham* decisions is that which in common law devolves upon every partnership and corporation. An employer or a company will be cast in damages for the wrongful acts of his or its servant or agent, and great hardship would result if such acts could be made the basis of damage claims only when it could be shown that the employer or corporation in whose services they occurred specifically authorized or were privy to them. That it does not suit the workman to be held to the same kind of responsibility as his employer is natural enough, and grows out of the disposition which has found such frequent and such vicious manifestation in the recognition of his claims to class rights. To find a parallel for the demand of the unions in this instance one would have to go back to the time when the nobility had special immunity and were privileged to disregard the laws which were enacted for the government of the common people.

There is every reason to believe that the Parliamentary Committee of the Trade Congress, so far from expecting this bill to pass, do not expect it to reach a second reading. It suits their purposes to have it appear that Parliament represents the interests of the employer class and refuses the reasonable demands of the poor wage earner for protection against the tyranny of the courts. They have a plan of their own, which is understood to be one which takes advantage of the Companies acts, behind which it is believed the unions can take shelter and escape liability under judgments ob-

tained against them in suits for damages for wrongful acts. The scheme is to organize in connection with each union a subsidiary company under the general corporations law, which shall be registered as a limited liability company. It will be empowered to collect funds for general charitable and benevolent purposes, pay sick benefits and make loans or donations to particular trade unions. To such subcompanies all the funds of the unions for all purposes would be paid, and when strike benefits or funds for aggressive movements are needed these will be borrowed as required, to be repaid by assessments to recoup their treasuries. The essence of the plan is that the union which, under the law, is answerable for the misdeeds of its officers, agents or members, shall have no funds of its own, while the auxiliary company, which has the funds, shall be irresponsible for any obligations incurred by the union under judgment. The plan is very simple—too simple, perhaps. Courts have an inconvenient habit of analysis of facts, and sometimes probe behind the forms to discover the substance of actions designed to defeat the ends of justice. It should not be difficult to establish the relation between a trade union and a company, ostensibly fraternal and benevolent, which is the custodian and disbursing of its funds, and is, *de facto*, its treasury incorporated. The counsel for claimants of damages against the trade unions may safely be left to take care of the interests of their clients who secure judgments for injuries inflicted.

The significance of this elaborate juggle, and in fact all the significance it has, lies in the fact that the British trade unions have no idea of recognizing the law as defined by the court of final appeal, but propose to make sport of the Lords by showing them that the working-man is much too clever to be made responsible for his actions like other and less privileged human beings. Their attitude is so insolent and defiant that, in the present temper of the English people, it may very well lead to class legislation which the trade unions do not suggest, and which they would be extremely sorry to see enacted. The reaction from too much toleration of trade union tyranny can only take place in one direction, and that is in a sharp curtailment of the rights and privileges claimed and hitherto enjoyed by organized labor.

The Life of Steel Frames

The statements made by Gen. William Sooy Smith at the dinner of the Chicago Real Estate Board, relative to the danger of rapid corrosion in the steel frames of buildings badly designed and improperly erected, are entitled to much more respectful consideration than they have received at the hands of those who should be in a position to realize and appreciate the danger to which he calls attention. General Smith's statements were not at all sensational. He pointed out in temperate language and with full knowledge of the facts that steel members of a building frame in positions to be attacked by moisture and air, and improperly or inadequately protected against such action, are likely to be short lived; and that as the members nearest the ground are likely to be the ones first and most energetically attacked, and as these are the ones which carry the superstructure, their failure will imperil the structures in which it occurs. These are not General Smith's words, but they express what we understand to be his meaning. The engineer with knowledge of the facts who should venture to contradict them would display more temerity than discretion.

Much of the early work in steel framing for buildings, and especially in those built speculatively by builders new to the work, under the direction of incompetent

architects who had not mastered the elements of a business closely allied in its problems to bridge designing and construction, was done with almost entire disregard of the safeguards against corrosion which experience has shown are the only ones which can be depended upon for complete protection. Steel supporting columns and horizontal girders were put in positions where they were reasonably certain to be subject to influences favoring rapid corrosion with no other or better protection than a skim of paint mixed with fish oil and applied with a brush, and so effectually hidden behind brick walls and partitions that no one can see what is happening to them. A critical structural inspection often affords grounds for great uneasiness on the part of owners and occupants, which is not corrected by the production of samples of iron and steel which have been long in position under quite other conditions without showing impairment. All that such exhibits prove is that when iron and steel are effectually protected against normal causes of corrosion they do not rust—not a new fact, certainly, nor one which has any value as a basis for the generalization that the steel frame of a building may be expected to last practically forever.

The steel frame is of incalculable value in modern architecture, and it is not a source of danger if the means of protecting it which are well known and are practiced in all good work are followed. Where these precautions are neglected and rusting begins it will continue until the strength of members is impaired, and if they cannot be replaced the structure they carry must come down. This is the whole matter in few words.

OBITUARY.

P. E. DUTCHER.

Pierpont E. Dutcher, president of the J. A. & P. E. Dutcher Company, manufacturers of steel castings, Milwaukee, Wis., died in that city on March 10, of a complication of diseases from which he had been for many years a sufferer. For two years he had seldom been able to leave his house. Mr. Dutcher was the son of John A. Dutcher, one of the more prominent of Milwaukee's early settlers, and was born in that city January 31, 1855. He was educated in Milwaukee schools and the old Markham Academy. At an early age he became his father's associate in business. In 1878 he went to Chicago and assumed charge of the tea importing branch of the business of Furrington, Small & Co., wholesale grocers. In 1882 he returned to Milwaukee and again went into business with his father, who was the senior partner of the Dutcher & Vose Stove Company. A few years later Pierpont E. Dutcher purchased the interest of the junior partner and the firm became known as the J. A. & P. E. Dutcher Company. In 1889 it was decided to discontinue the manufacture of stoves and devote the energies of the firm entirely to steel castings. When this change was made Mr. Dutcher devoted himself so ardently to the details of the new line of business that his health was seriously broken, although he had been an athlete. Although on the death of his father several years ago Mr. Dutcher became actual head of the company he did not remain in active charge long. His brother-in-law, Henry B. Goodrich, was placed in control as soon as Mr. Dutcher became unable to make his daily trips to the office, and no change will be necessitated by the death of the president.

NOTES.

WILLIAM L. ELKINS, JR., president of the Pennsylvania Iron Works, the Otto Coke & Chemical Company, the Pittsburgh and United Gas & Coke companies, and who was actively interested in a number of other industrial corporations, died suddenly from apoplexy on March 13, at his home, Menlo Lodge, Ashburne, near Philadelphia.

DR. ALBERT R. LEEDS, for 31 years professor of chem-

istry at Stevens Institute, Hoboken, N. J., died on March 13 at his home in Germantown, Pa., from cancer of the stomach, aged 55 years.

JOEL BARLOW MOREHEAD HIRONS, formerly a successful iron merchant in Philadelphia, died on March 11 in Covington, Va., where he was residing temporarily in the hope that his health might be improved.

JAMES A. CRAWFORD, a pioneer iron manufacturer of the Shenango Valley, died on February 28 at his home in Pittsburgh, aged 78 years. He was born at Norristown, Pa., and went to New Castle, Pa., during young manhood, with three brothers, with whom he developed the iron industries of Western Pennsylvania, Indiana and Alabama. Deceased was the last of his family, his brothers—Alexander, John M. and George W. Crawford—having died. Mr. Crawford was instrumental in the construction of the Beaver Valley Railroad, and was its secretary and treasurer until it was sold to the Pennsylvania. The Crawfords built rolling mills and furnaces in widely different sections and made fortunes in the early days of the iron industry. They were among the first to develop the Lake Superior ore regions, and James A. Crawford shipped large quantities of raw material over the country before his retirement from active business life.

FREDERICK A. LEEDS, a director of J. M. Warren & Co., wholesale Hardware merchants, Troy, N. Y., died on the 5th ult. Mr. Leeds had been a director since the formation of the corporation, and for 30 years was an active worker in the business.

O. C. DEWEY, a pioneer iron and cut nail manufacturer, of Wheeling, W. Va., died in that city on March 5, aged 69 years. Mr. Dewey, who was one of the organizers of the enterprise now known as the Riverside Mill, retired from business a number of years ago.

JACOB ROEMER, senior member of the Rand & Roemer Hardware Company, Manitowoc, Wis., died March 18 of pneumonia. Mr. Roemer was born in Germany in 1839, was taken to Manitowoc when 12 years of age and resided in the city from that time forward.

PHILO HURD SKIDMORE, founder of the Pacific Iron Works, of Bridgeport, Conn., died on March 21 at his residence, at Newtown, Conn., aged 84 years.

WILLIAM TREESE, one of the pioneer iron men of Blair County, Pa., and one of the last of the early forgers, died a few days ago near Hollidaysburg, Pa., aged 88. For years he ran forges for the Shoenbergers.

Trade Publications.

Farnley Iron Described.—That British iron makers have the desire and the ability to produce a very neat and thoroughly effective trade book is shown by the very handsome little volume sent out by the Farnley Iron Company, Limited, of Leeds, England. The company, who were established in 1844, own mines and collieries and make cold blast pig iron. This is first treated in a refinery and is then puddled. The puddled lumps, instead of being at once rolled into puddled bars for rerolling, are first hammered into blooms and rolled down into bars, which are cut up, refiled and again hammered into slabs or blooms before the final rolling into finished plates or bars. It will be noted, therefore, that the old fashioned method of making Yorkshire iron is adhered to and that naturally it possesses the capacity to resist torture, hot or cold, for which puddled iron made in this manner is justly famous. The little book is admirably equipped in every way and presents strong claims in behalf of well made iron as compared with modern steel.

Copper Floats.—The Hercules Float Works, Springfield, Mass., issue a general catalogue and price-list, No. 2, of Hercules seamless copper floats, and air chambers for all pressures. The standard weights and sizes of the copper ball floats range from 2½ inches, weighing 3 ounces, to 16 inches weighing 39 pounds. They also make column floats for water columns, boiler feeders, to order, any diameter to 15 inches and to 22½ inches in length. Their seamless copper air chambers are guaranteed to be free from imperfections in manufacture

and to have been tested to a pressure of 300 pounds per square inch, and for a working pressure of 150 pounds. All floats are also guaranteed to have been tested to 300 pounds pressure per square inch.

Milling Machines.—The Cincinnati Milling Machine Company of Cincinnati have just issued a new 1902 catalogue showing their new line of milling machines. This is a very handsome piece of book work. The illustrations are in half-tone throughout. A number of interesting improvements are illustrated and described in detail. Among these their new all gear feed mechanism, whereby all feed changes are instantly obtained by movement of lever, the drive being always positive, permitting much heavier and faster cuts than the old belt fed mechanism.

Machinists' Tools and Supplies.—Samuel Harris & Co., 23 and 25 South Clinton street, Chicago, Ill., have just issued a most interesting catalogue of tools and supplies of all kinds for machinists and manufacturers. This publication comprises 512 pages, but it is of such convenient size that it can easily be carried in the pocket ready for instant reference. The contents cover a very great variety of items, including large iron working tools, as well as the general line of small supplies. The catalogue quotes prices throughout. A unique feature of this work is the insertion of interesting miscellany, covering recipes, aphorisms, valuable technical information and pointed business suggestions. These are not arranged systematically, but strike the eye of the reader on every second or third page throughout the work.

Pan-Exposition Salvage.—The Chicago House Wrecking Company, West Thirty-fifth and Iron streets, Chicago, and Exposition Grounds, Buffalo, N. Y., have issued their Catalogue No. 122, covering material from the Pan-American Exposition which they have purchased and are now offering for sale. The catalogue calls attention to the great variety of lumber which they are able to offer; the quantity of interior fittings, trimmings, sash and doors; machinery, consisting of a variety of engines, boilers, dynamos, fire pumps, &c.; electrical supplies; statues and columns; structural material in great variety; plumbing material and supplies; builders' hardware; steel and iron roofing and siding; metal tiled roofing; standard wrought pipe, radiation, valves and fittings; roofing glass, &c. The company have had wide experience in handling material of this kind, dating from their great purchase of the Chicago World's Fair buildings in 1893. Their experience enables them to secure material of this character in the best possible condition for subsequent use in other structures.

Crane Extra Heavy Valves and Fittings.—The Crane Company, Chicago, have just issued a special supplementary catalogue of extra heavy valves and fittings for 250 pounds' working pressure. This catalogue comprises 96 pages, and treats of straightway, globe, angle, cross, swing check, foot and blow off valves, expansion joints, malleable elbows and tees, flanged fittings, pipe bends, flanged tees and crosses, &c., which are designed and manufactured for high pressure. The dimensions of extra heavy valves and flanged fittings, as shown in previous catalogues, have been changed as follows: Center to face, face to face, diameter of flanges and template for drilling. The company maintain a complete laboratory for making chemical and physical analysis of metals to insure a uniform and reliable product. Tests are continually being made to determine tensile strength, shearing strength, torsion and hardness of iron used. The malleable iron used in their castings has a tensile strength of 33,000 to 40,000 pounds per square inch, the gray iron 22,000 to 26,000 pounds and the hard brass 34,000 pounds. The catalogue gives a great deal of valuable information relative to the different styles of valves and fittings, together with tables of dimensions, which will be found very desirable for the use of engineers and others in laying out their work intelligently to avoid delays by correspondence. Another feature of the catalogue is the insertion of practical articles written by R. T. Crane on such subjects as making tight screwed joints for very high pressure and defects in threads on wrought iron pipe. The company will issue their regular standard catalogue about April 15.

MANUFACTURING.

Iron and Steel.

The report to the effect that the plant of the McClintic-Marshall Construction Company, at Rankin, near Pittsburgh, was closed down recently on account of scarcity of material is incorrect. Both of the plants of this concern at Rankin, Pa., and Pottstown, Pa., have been operating double turn continuously. The McClintic-Marshall Construction Company erect steel buildings, bridges, &c., and have a large amount of work on hand.

As before noted in these columns, the Penn Iron & Coal Company, operating a blast furnace at Canal Dover, Ohio, will rebuild the stack during this summer and very much enlarge it. The capacity will be increased to about 400 tons daily. The statement that J. C. Reeves, whose sheet mill at Canal Dover, Ohio, was taken over by the American Sheet Steel Company, has become interested in the Penn Iron & Coal Company is officially denied.

The six-mill sheet plant of the Ashland Steel Company, Incorporated, at Ashland, Ky., will be ready to start in from three to four weeks.

Within a week or ten days it is expected that a new company will be organized, including both the Hartman Mfg. Company of New Castle, Pa., and the Cuyahoga Steel & Wire Company of Cuyahoga Falls, Ohio, and also start both of these plants in full operation. E. A. Henry, now president of the Cuyahoga Steel & Wire Company, will be president and manager of the reorganized concern.

The Monarch Iron & Steel Company of Pittsburgh have been incorporated under the laws of Delaware, with a capital of \$100,000. The concern propose to erect a plant at Parkersburg, W. Va., adjoining that of the Parkersburg Iron & Steel Company, to make planished iron sheets.

The Buffalo Iron Company, Nashville, Tenn., have recently finished a new hot blast Gordon type 65-foot stove. They have also contracted for a new 84-inch Welmar blowing engine. Within the last few months they have completed a new washer plant and about 3 miles of standard gauge railroad, which opens up new mines to the company and will greatly increase their ore output. The product of these furnaces is being run on high silicon iron as a softener. The iron also contains a high percentage of phosphorus, and is meeting with ready sale for all mixes requiring a soft fluid iron.

The Bethlehem Steel Company of South Bethlehem, Pa., are building three new open hearth furnaces, two of them being of 50 tons capacity and one of 15 tons capacity. Additions are also being made to the facilities for the manufacture of armor plate.

The new Talbot open hearth furnace being built by Jones & Laughlins, Limited, at their American Iron & Steel Works, on the South Side, Pittsburgh, is expected to be ready for operation between April 15 and May 1. This furnace is expected to make about 400 tons of steel every 24 hours.

Active work has been started on large additions to be made to the armor plate department of the Homestead Steel Works of the Carnegie Steel Company. The present armor plate plant has a maximum capacity of about 3000 tons a year, but this will be increased to more than 6000 tons annually. Contracts for additional machinery for the enlarged plant have been awarded and much of the costly equipment has been under way for some time. New machine shops and accessory buildings are to be put up and old ones removed from the mill property entirely. It is expected that the improvements will require a year to complete. The demands of the United States naval officers for more armor plate facilities are largely responsible for these additions.

The Illinois Steel Company blew in a furnace at their North Works last Thursday on speigel. They now have all their furnaces running—namely, ten at their South Works, two at their Union Works, one at their North Works, three at Joliet and two at Bay View, Milwaukee. While they have two stacks at their North Works they only operate one at a time, repairing one stack while the other is in.

W. C. Downey & Co., Springfield, Ohio, have purchased a plot of ground at Gallagher and Washington streets, where they will erect a two-story iron building, 85 x 95 feet, to be used for the manufacture of steel wire bale ties.

D. Lamond & Son, engineers and contractors, Ferguson Block, Pittsburgh, have received an order from the Ashland Iron & Mining Company, Ashland, Ky., for remodeling the first of four Whitwell four-pass fire brick stoves. They will be raised to 75 feet high and relined as C. H. Foote patent two-pass stoves, for which D. Lamond & Son are the sole agents.

The La Belle Iron Works, Steubenville, Ohio, will shortly make a large increase in their capital stock. This concern have nearly completed the building of a large open hearth steel plant, and have put in operation their pipe mill for making lap and butt weld pipe. This concern will furnish open hearth steel to the Pope Tin Plate Company, who are building a 12-mill tin plate plant at Steubenville.

The Sharon Works of the Republic Iron & Steel Company,

at Sharon, Pa., have been idle for some time, on account of scarcity of pig metal. No positive orders have yet been received from the general office in Chicago to start this works.

The Tuscora Steel Company, Newcomerstown, Ohio, have placed two mills of their new sheet plant in operation and will start up the third this week. The Tuscora Steel Company were organized last spring, with a capital stock of \$200,000, and shortly thereafter broke ground for the erection of a four-mill sheet plant and galvanizing plant. The product will be black and galvanized sheets. The equipment was mostly furnished by the International Power Company of Worcester, Mass.; Braddock Machine & Mfg. Company, Braddock, Pa.; Case & Co. of Columbus, Ohio; Otis Steel Company of Cleveland, and Keystone Mfg. Company of Erie, Pa.

The Standard Steel Works, Burnham, Mifflin County, Pa., have broken ground for the erection of two buildings, 98 x 300 feet, to be used for making castings for locomotive work. The traveling cranes will be furnished by William Sellers & Co., Incorporated, and the cupolas will be of the Colliat type. Contracts for all other necessary appliances have been placed with various parties.

W. H. H. Hart of San Francisco, Cal., advises us that in connection with the large steel plant that he and other prominent capitalists are planning to build on the Pacific Coast they will put in a large steel shipbuilding plant, the location of which will probably be in the vicinity of Oakland, though a site has not yet been fully decided upon. As stated in these columns recently, large deposits of iron ore in Madera County have been secured, and it is their intention to construct a smelter and a steel plant which is to be the nucleus of a number of manufacturing plants planned on the grandest scale.

The Carnegie Steel Company of Pittsburgh received an order last week for about 2000 tons of rails from the Kansas City, Mexico & Orient Railway.

It is rumored that the La Belle Iron Works of Wheeling, W. Va., will engage in the manufacture of structural steel.

General Machinery.

On March 15 Frank H. Czarniecki retired from the firm of Smith & Czarniecki, which business will be succeeded by Charles G. Smith Company, representing in Pittsburgh and surrounding territory within 100 miles' radius the Safety Emery Wheel Company of Springfield, Ohio, grinding machinery and emery wheels; Wilmarth & Morman Company of Grand Rapids, Mich., new Yankee twist drill grinders; George Gorton Machine Company of Racine, Wis., disk grinding machinery; Eastern Machinery Company of New Haven, Conn., Frisbie friction pulleys and clutches; Hill, Clarke & Co. of Boston, Mass., milling machines, radial drills, bath universal grinders, drill presses, &c. Mr. Czarniecki will represent the Western Mfg. Company's lathe, planer and shaper tools in the Pittsburgh district. Both addresses will remain as heretofore, 347 Fifth avenue, Pittsburgh, Pa.

The Youngstown Engineering Company, who recently started a new plant at Youngstown, Ohio, have furnished a 15-ton electric crane to the Youngstown Foundry & Machine Company of that city.

The National Bridge Company of Pennsylvania, with offices in the Fitzsimons Building, Pittsburgh, and who will build a bridge plant at Monaca, Pa., have given a contract to the Browning Engineering Company of Cleveland, Ohio, for a heavy traveling crane and also for a 75-foot 10-ton overhead traveling crane. To Westinghouse, Church, Kerr & Co. they have given a contract for a large gas engine.

The Tennessee Coal, Iron & Railway Company have purchased from the Pittsburgh Filter Mfg. Company, Pittsburgh, Pa., a central gravity water softening plant of 25,000 horsepower capacity, to purify the water used in the boilers of their various industries at Ensley and Pratt City, Ala. This will be the largest single water softening plant in the United States, if not in the world, and will be in operation about June 1.

The Pennsylvania Engineering Works, New Castle, Pa., have placed contracts for some additions to their works, which will consist of a new machine shop, 84 x 136 feet, and an electric power plant. The structural iron work will be furnished by the Fort Pitt Bridge Company of Pittsburgh. A large amount of modern machinery will be installed in the new works.

The Monessen Foundry & Machine Company, at present operating foundry and machine shops at Monessen, Pa., will soon break ground for a new plant at Page Station, near Monessen. The old foundry buildings of this concern are located on property acquired by the Pittsburgh Steel Company and will be razed. The capacity of the new foundry will be much larger than the old one and will give employment to more men. Work on the new plant will be rushed as fast as possible.

The Elkhart Bridge Company started the machinery in their new works at Elkhart, Ind., March 17. They expect to be operating in every department by April 1. The plant, which covers 4 acres, is admirably equipped, all the machinery being motor driven. F. W. Fahlgren is general superintendent.

The Lufkin Foundry & Machine Company, Lufkin, Texas, recently incorporated, will erect new shops for general foundry and machine work, which they expect to have in operation by June. All equipment, except a second-hand 60-inch lathe, which

they still are in the market for, has been purchased. J. H. Kurth, president of the Angelina County Lumber Company, Ketye, is interested.

McDougall & Holt, Sioux City, Iowa, have purchased the machine shop of the Hawkeye Electric Company, 210 West Fourth street, which they have refitted for general machine work. An addition to the shop will be built, which is to be used for repairing boilers.

The Hoyt & Bro. branch of the American Wood Working Machinery Company, at Aurora, Ill., are building a large addition to their plant which will double the present capacity. All equipment has been purchased, so that when the buildings are completed the machinery will be ready to be installed.

L. L. Stevens of Birmingham, Ala., has purchased most of the machinery for the new \$50,000 brick plant he and others are to build at Lovick, about 15 miles away, from E. M. Freese & Co., Gallon, Ohio, and Milner & Kettig Company, Birmingham. Two 80 horse-power boilers and 150 horse-power engine were purchased from the North Alabama Engineering Company of New Decatur, Ala.

C. J. Hartley & Co., general machinists, Decatur, Ill., have been succeeded by the C. J. Hartley Company, recently incorporated.

The Vermont Electric Company, Essex Junction, Vt., are arranging to build an auxiliary water power station above their present plant of 2500 horse-power. The new plant will develop about 4000 horse-power and will cost, approximately, \$500,000.

Col. H. A. Frambach of Kaukauna, Wis., advises us that the recently organized Cheboygan Paper Company, Cheboygan, Mich., are in the market for entire equipment of paper making and power machinery for the new plant they are to erect at Kaukauna. The company have purchased the water power and dam at that point and have plans prepared for a plant to cost about \$70,000. The buildings will cover about 4 acres and will be equipped with all modern appliances. The officers are Col. H. A. Frambach, president; A. MacArthur of Chicago, vice-president; W. S. MacArthur of Cheboygan, secretary and treasurer.

The Winder Foundry & Machine Works, Winder, Ga., will erect an addition, 50 x 100 feet, to their plant. They will manufacture all machinery that will be required.

The Forsyth Pattern Works of Youngstown, Ohio, have bought the property of the American Can Company in that city and will occupy the buildings. It is the intention of the Forsyth Pattern Works to apply for a charter of incorporation under the laws of New Jersey, with a capital of \$100,000, and greatly increase their capacity for the manufacture of patterns.

The additions which the Jeansville Iron Works Company of Jeansville, Pa., are to build to their plant this spring will comprise a new foundry building, a 100-foot extension to the machine shop, and probably a new pattern house and office. When these improvements are completed the capacity will be doubled.

The Union Machine Company, Fitchburg, Mass., will build a new stack house, 20 x 23 feet, and remodel the Rollstone machine shop for an iron foundry.

The Haughton Elevator & Machine Company, Toledo, Ohio, are in the market for a few machine tools. Though they have just completed new works, doubling their capacity, they find them too small for their business, and are contemplating enlarging again this fall. At a recent meeting of the stockholders a 100 per cent. dividend was declared and some changes were made in the Board of Directors.

The National Machinery Company, 244-246 Butler Exchange, Providence, R. I., have been incorporated, with a capital stock of \$100,000, to deal in new and second-hand machinery. The officers are Merritt F. Whipple, president; William S. Nye, secretary, and Charles H. Kenyon, treasurer.

The M. C. Davies Machinery & Electric Company, Tacoma, Wash., recently organized for the manufacture of small dynamos and motors, switches and fixtures, have secured a new plant and installed Field lathes and Barnes drill presses. M. C. Davies is president.

The Colburn Machine Tool Company, Franklin, Pa., who are erecting a plant for the manufacture of machine tools, expect to have it completed and ready for operation within the next two or three months.

The Pomona Mfg. Company, Pomona, Cal., recently incorporated, are in the market for some equipment for their new plant, consisting of a machine shop, foundry, pattern and erecting rooms, which they will erect on a plot of ground recently purchased. They will manufacture pumps and agricultural implements. S. M. Fulton is secretary.

The plant of Alfred Catchpole at Geneva, N. Y., has been purchased by C. J. Arnold and Walter Howard, both of Pittsburgh, who will continue the manufacture of the Catchpole machines.

The Southern Engine & Boiler Works, Jackson, Tenn., which were commenced and incorporated under the laws of the State of Tennessee in June, 1884, have been enlarged several times since then. At present an entirely new and improved set of buildings is being erected on the ground of the company, ad-

jacent to the old structures, which will be taken down when the former are completed. The machine shop is 160 x 115 feet; boiler shop, 130 x 100 feet; foundry, 120 x 70 feet; wood working shop, 100 x 70 feet, and warehouse, 140 x 60 feet. All except the foundry will be of two stories and constructed of brick and steel. There will be a brick office of three stories. Of new machinery there will be two electric cranes manufactured by the Niles Tool Works, Hamilton, Ohio, and also a considerable number of improved tools, orders for which have not been placed. The business of the company has been and continues all that can be desired. Of recently filled orders shipments have been made to points in Mississippi, Alabama, Georgia, Florida, Louisiana, Texas, Arkansas, Missouri, Kentucky, Illinois, Wisconsin and also to Mexico. The staple lines of manufacture are engines, air compressors, boilers, saw mills and a general line of mill machinery. The president of the company is W. L. Neely; vice-president, W. E. McClamrock, and secretary and treasurer, Exile Burkitt.

Four of the nine bents in the Fore River Ship & Engine Company's new ship house at Quincy, Mass., are completed and two of the four electric cranes have already been put into position. As soon as the fifth bent is finished the ship house will be utilized in constructing the battle ships "New Jersey" and "Rhode Island" and the seven-masted schooner. A fourth vessel can be accommodated at the same time if desirable. The work of constructing the vessels and completing the ship house will go on simultaneously, the building being pushed as fast as possible in one direction while the construction work is carried on under the finished section.

Bridges and Buildings.

The Pittsburgh Construction Company, Bissell Block, Pittsburgh, have received an order from the A. Garrison Foundry Company of that city for a large extension to their present plant. Also a coal tippler for the Pittsburgh Coal Company at their Pan Handle mine at Woodville. Also an order for the new steel building work of the General Fire Proofing Company at Youngstown, Ohio, consisting of two buildings covering an area approximating 130 x 320 feet, one building being two stories in height. All the frame work is of structural steel.

The Elkhart Bridge Company of Elkhart, Ind., have commenced operations. See General Machinery.

The West Virginia Bridge & Construction Company, Wheeling, W. Va., who are to build a large bridge and structural works at Glens Run, near Wheeling, have been incorporated with a capital stock of \$500,000, and the following officers and directors have been chosen: Edward Hazlett, president; George A. Laughlin, vice-president; G. E. Wincher, secretary and treasurer; J. H. Barrett, general manager; C. R. Hubbard, J. J. Holloway, W. E. Stone, John A. Hess and E. W. Oglebay. They advise us that building operations will be commenced as soon as weather permits, and the buildings, which will be of steel, will be equipped with machinery of the most approved type.

The Penn Bridge Company, Beaver Falls, Pa., have under consideration a large increase in their capital stock, and will also make considerable additions to their present plant.

Boilers, Engines, &c.

The William Tod Company of Youngstown Ohio, have taken a contract for a pair of 30 x 36 inch geared reversing engines for the new open hearth steel plant being built by Wickwire Brothers at Cortland, N. Y.

The Atlas Engine Works, Indianapolis, Ind., have increased their capital stock for the purpose of providing the means for enlarging the capacity of their plant. The stock has heretofore consisted of \$350,000 preferred and \$200,000 common. The increase is to \$1,000,000 each of preferred and common.

Walsh & Weldner, Chattanooga, Tenn., are now building a large marine boiler for the Iowa Iron Works, Dubuque, Iowa; a large high pressure boiler for the George I. Kimball Grain Company, Kansas City, Mo., and a complete blast furnace for the Woodstock Iron Company, Anniston, Ala. They are also overhauling the furnaces of the Woodward Iron Company, Woodward, Ala.; the Cranberry furnaces at Johnson City, Tenn., and those of the Red River Furnace Company, Clarksville, Tenn. They are building boilers for water works at the following places: Kaufman, Texas; Greenville, Ala.; Gloster, Miss., and Salisbury, N. C.

The New York Central Iron Works, Geneva, N. Y., manufacturers of the Dunning boilers, contemplate the removal of their plant to another city. The new location has not yet been decided.

The Aberdeen Gas Company, Aberdeen, S. D., will install an electric lighting plant.

The recently organized Cheboygan Paper Company, Cheboygan, Mich., are in the market for engines and boilers for their new plant. Address Col. H. A. Frambach, president, Kaukauna, Wis.

The Phelps gasoline engine, which has been manufactured at Phelps, N. Y., for the past few years, has been taken over by the recently organized Phelps Gasoline Engine & Machine Works, who propose to enlarge the business and add to the present line the manufacture of other devices. For the present the new company will use the old plant, but it is their inten-

tion to either move into a larger building which is at their disposal or build a new one. In either case some new equipment will be required as soon as they get ready to enlarge their capacity. The officers are William C. Edmonston, president; James H. Coleman, vice-president; William A. Howe, secretary and treasurer; Edwin S. Corwin, manager, and Weston E. Watkins, superintendent.

The city of Albion, Mich., will vote April 7 on the question of issuing bonds for an electric plant to cost \$25,000. James Shanley, Mayor, and F. W. Culver, clerk Board of Public Works.

The Independent Gas & Power Company, San Francisco, Cal., are building a new boiler house in which will be installed 300 horse-power of Heine boilers, purchased from the Risdon Iron Works.

The Fischer Foundry & Machine Company of Pittsburgh are preparing to erect an extensive plant between Connellsville and White Rock, for the manufacture of automatic steam engines. The site has already been secured.

The strike at the plant of the Niles Boiler Company, Niles, Ohio, has been settled satisfactorily to both sides and the men have returned to work.

Foundries.

The Shaw-Gerlinger Steel Casting Company, recently organized at Milwaukee, Wis., have decided to locate their new works in the suburb of West Allis. They have secured a large tract of land lying along the Allis Belt Line Railroad, which will give the company access to both the Chicago & Northwestern and Chicago, Milwaukee & St. Paul railroads.

The Central Machine Company, Niagara Falls, N. Y., have purchased the Niagara Iron & Brass Foundry, on Ashland avenue, formerly owned by A. J. Dobbie. They are building a small addition to the plant and expect to make further additions this summer.

The Commonwealth Steel Company, St. Louis, Mo., open hearth steel castings, have started work on the erection of their new plant at Granite City. They expect to pour the first heat in September.

In order to handle their rapidly growing galvanizing and tinning business the Malleable Iron Fittings Company, Branford, Conn., are obliged to again increase their capacity in this department, and have under consideration plans that call for a new building to contain about 7000 square feet of floor space. The new plant will have its own power plant and shipping room, the power being required in the gray iron tinning department, and the building will be equipped throughout with overhead and surface tracks to facilitate the rapid and economical handling of work. In addition to their regular line of galvanized and black malleable iron, steam, water and gas fittings, which include everything in these goods known to the trade, they contract to manufacture for others hardware specialties of malleable iron, galvanized or tinned, and are manufacturers of malleable, steel and semi-steel castings. Their plant being located at tidewater places them in exceptionally good position to manufacture goods at the minimum of cost.

The Cedar Rapids Foundry & Machine Company, Cedar Rapids, Iowa, recently organized, founders and machinists, will have their plant in operation early in May. The officers are Joseph Cockfield, president and treasurer, and D. B. Ketty, vice-president and secretary.

J. R. Blakeslee of the Ajax Mfg. Company, Cleveland, Ohio, has purchased the Patterson Foundry Company, which adjoins the plant of the Ajax Company. Possession was given Mr. Blakeslee last week.

The stockholders of the A. Garrison Foundry Company, Pittsburgh, builders of rolls and rolling mill machinery, met in that city on Monday, March 24, for the purpose of voting for or against a proposed increase of the capital stock of the company. No definite action was taken, but another meeting will be held on Tuesday, April 8. This concern propose to make some large additions to their present plant and have already let a contract for a large steel building to the Pittsburgh Construction Company of Pittsburgh.

Fires.

The piano factory of Hardman, Peck & Co., 633 West Forty-eighth street, New York City, was destroyed by fire March 21. The loss will approximate \$200,000.

The Lowville Iron Works, Lowville, N. Y., were destroyed by fire last week. The loss is about \$6000.

Fifield Brothers' fertilizer plant at Pleasantville, Pa., was destroyed by fire March 20. The loss is placed at \$75,000.

Levering & Garrigues, Philadelphia, Pa., suffered a \$25,000 loss by fire at their bridge and structural iron plant at Ludlow and Thirty-third streets, March 24. Most of the damage was to machinery.

Hardware.

George S. Parkes & Co., Nashville, Tenn., report large orders for their spokes, most of the demand being for export.

The Chattanooga Iron & Wire Works, Chattanooga, Tenn., who began operations in the spring of 1901 as manufacturers of architectural and builders' iron, are now completing two sets of steel stairways to be put in what was a military hospital build-

ing in Havana, Cuba, but which is now being fitted up as a public school by the United States Government.

The Ornamental Iron & Wire Company, Chattanooga, Tenn., have just furnished 50 fire escapes to the cities of Norfolk and Newport News, Va. They are also erecting iron fences around court houses in cities in Mississippi, Texas, Alabama and South Carolina. They have recently shipped iron stairways to several Western States and have contracts for bank railings for several new banks at Tennessee and one in Georgia. Since the first of the year the company have made additions to their facilities in several respects by which their output has been considerably increased.

At the works of Henry Disston & Sons, Philadelphia, Pa., business is exceedingly active. They are running full time with 2500 names on the pay roll, yet they are taking no orders for saws for delivery this side of July. In miscellaneous tools they are about a month behind with their orders, but with the completion of their new steel mill they expect to do a little better. They are using a portion of their new mill now, but it will be two or three months before it is ready for full operation. From the number and character of the orders that are coming in it is the opinion of the company that the fall months are likely to develop the largest volume of business that the country has ever known.

The Dixie Plow Company, Chattanooga, Tenn., are manufacturing the Dixie reversible disk plow, which was patented by W. B. Michael June 11, 1901. The special feature of the plow is its plowing on one side of the land, throwing soil all one way on level land or hill side. The plow has been further improved by an additional patent which Mr. Michael obtained February 11, this year, for an automatic adjustable scraper, which keeps the disk clear in whatever land the plow is being used.

The Tower Mfg. Company, Madison, Ind., manufacturers of tacks, nails, staples, rivets, burrs, &c., have increased the capacity of their plant by the addition of a number of machines, and not long ago built a large warehouse for storing their supplies of wire and tack plate. They have been running far into the night for the past 30 days in their packing department, a condition which seems likely to continue throughout the month of March. The company state that they are keeping their product up to the highest possible standard.

The American Chain Company's plant at Zanesville, Ohio, has been in successful operation since August 1 last, having a capacity of from 125 to 150 tons every four weeks. The average product for some time past has been very close to the former figure. The company manufacture common proof coil BB, BBB, and dredge chain, close and stud link cable chains, railroad, wagon, log, steel loading and special chains of every description. The following are the officers: A. L. Wetherald, president; H. A. Sharpe, vice-president; Jas. A. Wells, secretary and treasurer; Wm. M. Wells, assistant secretary and treasurer, and W. J. S. Woodall, general superintendent. Mr. Woodall has been identified with the chain industry at various times for 20 years, with companies at Cuyahoga Falls, Ohio; Pittsburgh, Findlay, Ohio; Lebanon, Pa., and other points. The company refer to their plant as thoroughly up to date and well equipped.

Ives Mfg. Company, with offices at 46 Campau Building, Detroit, Mich., have been incorporated for the purpose of putting on the market in a general way the Ives automatic door opener, which has been thoroughly tested for the past year or so. The stockholders of the company are W. B. Comstock, Alpena; Fred. E. Gregory, Henry A. Haigh, W. A. Comstock, Detroit, and Louis Ives, Dearborn. The officers are: President, W. B. Comstock; vice-president and manager, Louis Ives; secretary and treasurer, W. A. Comstock.

The Savage Arms Company, Utica, N. Y., who since their organization have been located in the old Lord & Latimer plant in Broad street, will, it is expected, within a year be installed in new buildings erected to the particular needs of this business. These will be located on a part of the land some time ago given to the company. Plans for two new brick structures, of sufficient size to contain the whole plant excepting the cartridge making industry, have been prepared and work will be commenced on the buildings early in the spring. The officers of the company hope to be able to occupy the new structures early next fall. The larger of the two buildings will be a brick structure, 250 x 50 feet, two stories high, of mill construction. The first floor or the basement will be used for metal polishing, steam browning, forging, &c., with shooting gallery in the extreme rear. On the second floor will be a machine room and offices of the company. On the top floor there will be one large workroom. Opening from this will be drafting, varnishing and polishing rooms, all of which will be located in a tower at the side of the building proper and built from the ground. The only connection between the floors will be through this side structure, which will contain the stairs and the elevator. This in turn will be cut off from the main part by automatic sliding doors of metal. The building will be equipped with the sprinkler system of fire protection. A switch from the West Shore will run into the factory yard. The second of the buildings will stand nearer the cartridge factory and will be connected with it by a covered passageway. This will be 73 x 33 feet on the ground and 15 feet high. This building will be fire proof, and will be used for the furnace boiler and for foundry purposes. Occupancy of the new plant will be marked by the employment

of new machinery. The company now turn out about 35 guns a day and employ 135 hands, and the output will be greatly increased with the improved facilities of new quarters.

The Indiana Chain Works, Jeffersonville, Ind., have recently completed a new factory, the equipment of which is of the latest type. They advise us that they have 110 regular chain fires, together with five heavy fires for heavy chains. The company expect to be in a position within the next 30 days to furnish every make in the chain line, from 1-inch to 3-16 inch.

The W. J. Clark Company of Salem, Ohio, who make the Lane patent joist and timber hangers, have been compelled to work overtime for several months to keep up with orders for hangers. They are now installing some additional machinery for that work and will soon be in shape to supply any reasonable demand for hangers without working nights.

The Gurney Mfg. Company, Roan Mountain, Tenn., who manufacture a wooden bowl for bakers' and confectioners' use, and of which they claim their product constitutes four-fifths of what is made in the world, and who also manufacture the Gurney wood split pulley, are on the outlook for a better point of manufacture. We understand they are negotiating to locate in Chattanooga or some other town in the central South, where cheap raw material and good shipping facilities can be had.

Papers have been filed with the county clerk of Essex County, N. J., incorporating the Remington Metallic Cartridge Company, with a capital stock of \$250,000. The incorporators are Eliphalet Remington of Iilon, N. Y.; Stuart Lindsley of Orange, N. J., and Joseph M. Merrill of East Orange, N. J. The officers of the company will be: President, Eliphalet Remington; vice-president, Joseph M. Merrill; secretary and treasurer, Stuart Lindsley. The object of this company is the manufacture of metallic cartridges and ammunition of every form and description. As soon as practicable the manufacture of cartridges will be commenced on a large scale, and in all probability the plant will be located at Iilon.

Miscellaneous.

The stockholders of the Union Switch & Signal Company met in Pittsburgh recently and elected the following directors: George Westinghouse, G. C. Smith, Robert Pitcairn, J. H. Willock, William McConway, Thomas Rodd, and Frank Moore. George Westinghouse was re-elected president.

The Wisconsin Wheel Works of Racine, Wis., are conducting such a large export business in bicycles and motor cycles that they have decided to establish a branch house in London.

The Fosston Wind Stacker Company have taken possession of the two buildings leased at St. Louis Park, Minneapolis, Minn., which they are now fitting up for their use.

J. B. Kingston & Co., Shelbyville, Tenn., have purchased the Stewart mill property recently destroyed by fire, and will build a 60-barrel flour mill, also put in a corn meal outfit and a new water wheel. J. F. Boyd is a partner in the enterprise.

W. R. Crabtree has purchased J. E. Sanders' interest in the Crabtree & Sanders Company, Chattanooga, Tenn., manufacturers of Sanders' improved hay press, and is making arrangements to manufacture the press on a large scale.

A company have been organized at Seattle, Wash., to manufacture and place on the market a car coupler invented by G. C. Harlan. For the present the couplers will be made by contract. J. O. Robinson is secretary, with offices at 25 Hinckley Block.

The Perkins Electric Switch Mfg. Company have removed their plant from Hartford to Bridgeport, Conn., and combined it with their works at the latter place.

Harry Brothers Company, Dallas, Texas, manufacturers of galvanized steel tanks, oil, water and wind mill tanks, are building an extension, 100 x 150 feet, to their plant, and are installing additional machinery for the building of heavy steel tanks, stand pipes, grain storage tanks, &c., working iron from 3-16 to 5/8 inch in thickness. All machinery has been purchased.

The Balkwill Pattern Works, Cleveland, Ohio, have increased their facilities for the manufacture of all kinds of patterns and small working models of machinery. The concern make patterns for a number of large companies throughout the country, including the Wellman-Seaver Engineering Company.

The recently incorporated Southern Metal Company, Orangeburg, S. C., manufacturers of steel ceilings, galvanized iron cornices, &c., have their plant, 80 x 125 feet, in operation, with plenty of work on hand and bright prospects for a good season. The officers are W. S. Barton, president; D. J. Hydrick, secretary and treasurer, and J. B. Outland, manager.

J. H. Wagner & Co. of Vernon, Ind., have been reorganized as the Wagner Plow Company and moved to Indianapolis, Ind., where they have erected a new plant for the manufacture of walking plows, both chilled and steel, and disk plows, both walking and riding. All the equipment was removed from the old plant and what little new machinery was required has been purchased. A new Sinker-Davis 110 horse-power engine has been installed.

The Hoke Mfg. Company, South Bend, Ind., manufacturers of corn cultivators, harrows, &c., will move their plant to Frankfort this summer, where they have secured a 10-acre site,

upon which will be erected a plant four times as large as the present one.

The Parsons Pulp & Paper Company, Parsons, W. Va., will increase the capacity of their plant to 125,000 pounds of bleached sulphite pulp per day by installing \$30,000 worth of additional machinery, which has been ordered.

The Monmouth Plow Company, Monmouth, Ill., have the plans for their new plant completed and expect to commence building operations next week.

The Means & Fulton Iron Works, builders of boilers, stand pipes, steel bridges and buildings, blast furnaces, tanks and towers, and general iron and steel work, Birmingham, Ala., have contracted to build five large irrigation tanks to be erected near New Orleans. They will also build four limekilns and two scrubbers for the Pittsburgh Reduction Company at their new works, East St. Louis, Ill.

The Western Electric Company, Chicago, are arranging for the erection of three additional buildings upon their property at Polk street and the river. One of these buildings will be occupied by the wood working department in the construction of telephone boxes. The building will be three stories, 96 x 157 feet. It will be entirely of fire proof material. The second building will be used for shipping purposes, will have a floor area of 8400 square feet, and a third will contain the machinery for stranding and will cover an area of 12,000 square feet.

The C. J. Moore Mfg. Company, Westfield, Mass., manufacturers of automobile parts and automobiles, have under consideration the erection of a plant for the manufacture of automobile parts.

The recently incorporated American Gas Generating Burner Company, Bowling Green Building, New York City, have completed their organization by the election of George A. Conner, James R. Milliken, William Sutphin, E. J. Morgan and G. N. Goddole as directors. At a meeting of the Board of Directors George A. Conner was chosen president, William Sutphin secretary and James R. Milliken treasurer. The company have acquired the patents of Mr. Dinsmore, and samples of the proposed manufactures of the company will be placed on exhibition at the offices within a few days.

The Keystone Fireproofing Company have been organized at Pittsburgh, with a capital of \$100,000, to manufacture fire proofing brick and sewer pipe at West Winfield, Butler County, Pa.

The Ohio Stove Company of Portsmouth, Ohio, will build an addition, 100 x 60 feet.

The Washington Coal & Coke Company, Dawson, Pa., N. P. Hyndman, general sales agent, Conestoga Building, Pittsburgh, have just received 100 new cars, to be used in shipping coal and coke. This company own enough individual cars to take care of almost their entire output of coal and coke and have been inconvenienced very little by the shortage.

Application has been made for an amended charter of the Pittsburgh Stove & Range Company of Pittsburgh that will permit the directors of that concern to sell off their foundries in the Pittsburgh district, as it is the intention of the company to centralize manufacturing in one large foundry, to be built at Beaver Falls, Pa. The Monongahela works of the Pittsburgh Stove & Range Company, at Monongahela City, have already been sold.

William D. Park, treasurer of the Hallwood Cash Register Company, Columbus, is quoted as saying there is no truth in the frequently published report that the company are planning to remove their plant to Toledo. He states it is the intention of the company to enlarge their Columbus plant, as their present facilities are inadequate.

The Springville Mfg. Company, Rockville, Conn., manufacturers of worsteds and woollens, will build an addition, 58 x 118 feet, to their plant on Main street.

The Peace Dale Company, Peace Dale, R. I., manufacturers of worsteds and woollens, are having plans prepared for a new factory, 50 x 150 feet, with an ell 80 x 50 feet.

Work on the Wheeling Roofing & Cornice Company's mill at New Martinsville, W. Va., is being pushed with all possible speed, and when completed will be one of the most modern mills in existence for the manufacture of roofing supplies. The whole plant will be operated by separate motors, so that each department or set of machines can be worked independent of the other.

The American Warming & Ventilating Company, at Pittsburgh, with \$250,000 capital, have been formed by Henry L. Williams, Pittsburgh, agent of the Wills Warming & Ventilating Company; Joseph E. McGinness of McGinness, Smith & Co.; William W. Dobbins, engineer of the Wills Company; Samuel Garrison, and Daniel Ashworth, a mechanical engineer. The company will absorb the Pennsylvania, Ohio and West Virginia territory of the Wills Company, who have many contracts for heating and ventilating school houses and large buildings. A plant will be built in Pittsburgh in the future.

The National Cable & Wire Company of Pittsburgh expect to operate a new plant at Shousetown, Pa., shortly after April 1. The concern will manufacture continuous coverings for cables.

The Aberdeen Gas Company, Aberdeen, S. D., contemplate installing a new incandescent, electric lighting plant complete, and will probably put in a reserve gas holder and about 3 1/2 miles of gas mains.

The Iron and Metal Trades.

Among the more conservative members of the trade the nervousness as to a runaway market still continues. It is feared that any rapid advance would check consumption, induce reselling and lead to a sharp reaction. As a matter of fact, occasional evidences of reselling by consumers are cropping up even now. One instance is quoted of a very large consumer of Bessemer Pig who is now marketing excessive purchases, while from Chicago comes the report that some of the railroad companies having contracts for Steel Rails for spring delivery are reselling a portion of their purchases.

Pittsburgh reports some pretty large sales of Bessemer Pig by outside interests at high prices, and there is little doubt that the furnacemen are being tempted by bids from merchants. We understand that negotiations are now pending between the Bessemer Association and the Steel Corporation for the requirements of the latter for the last quarter of the year. It may take a few days before these negotiations are brought to a close. They will probably involve upward of 100,000 tons of Pig Iron.

In Basic Pig Iron there have been sales by Virginia furnaces aggregating about 20,000 tons, chiefly to the Pittsburgh district, at private terms, and further business is about to be closed.

The leading Southern manufacturers of Foundry Iron held a meeting in this city this week, the views of those prevailing who oppose an advance. The Chicago makers, however, have put up the price 50c. a ton on local Pig Iron, and higher prices for Foundry Iron are being realized in all the leading markets.

In the Steel market there is very little movement, both so far as domestic or foreign is concerned. Small lots are being ordered for importation, but the majority of the smaller mills find it impossible to make ends meet at foreign prices, notably for Sheet Bars. They claim that they cannot afford to pay current prices of Steel and sell at the prices of Finished Material, which are being held stationary.

There is a growing restlessness as to prices of Finished Iron and Steel and increasing pressure to advance them. The makers of Iron Bars have put up the price and some manufacturers of Plates are urging a similar course. It may be that Wire Nails may be put up.

Tonnage is still coming in very freely. Additional large contracts have been placed for Bars by the makers of agricultural implements and machinery. There is a continued heavy movement in Structural Material, and the Plate makers are taking in more new business than they are winding up old contracts.

The markets for Old Material are pretty bare, and prices continue very firm. Some small lots of Heavy Melting Steel stock have been ordered for importation and there is further inquiry. The market abroad is restricted, so far as its supplies are concerned.

A Comparison of Prices.

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

| | Mar. 26, 1902. | Mar. 12, 1902. | Feb. 26, 1902. | Mar. 27, 1901. |
|---|----------------|----------------|----------------|----------------|
| PIG IRON: | | | | |
| Foundry Pig No. 2, Standard, Philadelphia | \$18.75 | \$18.50 | \$17.75 | \$15.40 |
| Foundry Pig No. 2, Southern, Cincinnati | 15.00 | 15.00 | 14.75 | 14.50 |
| Foundry Pig No. 2, Local, Chicago | 18.50 | 18.00 | 17.00 | 15.50 |
| Bessemer Pig, Pittsburgh | 17.50 | 17.50 | 17.25 | 16.75 |
| Gray Forge, Pittsburgh | 18.00 | 18.00 | 16.75 | 14.50 |
| Lake Superior Charcoal, Chicago | 21.00 | 20.50 | 20.50 | 18.00 |

BILLETS, RAILS, ETC.:

| | | | | |
|--|-------|-------|-------|-------|
| Steel Billets, Pittsburgh | 31.00 | 32.00 | 30.00 | 24.00 |
| Steel Billets, Philadelphia | 33.00 | 32.00 | 32.00 | 26.00 |
| Steel Billets, Chicago | | | | 25.00 |
| Wire Rods, Pittsburgh | 36.00 | 36.00 | 35.00 | 36.00 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 26.00 |
| Spikes, Tidewater | 2.00 | 2.00 | 2.00 | 1.55 |
| Splice Bars, Tidewater | 1.60 | 1.60 | 1.60 | 1.35 |

OLD MATERIAL:

| | | | | |
|------------------------------------|-------|-------|-------|-------|
| O. Steel Rails, Chicago | 17.50 | 17.00 | 15.50 | 14.00 |
| O. Steel Rails, Philadelphia | | | 18.75 | 16.00 |
| O. Iron Rails, Chicago | 24.00 | 24.00 | 23.00 | 19.50 |
| O. Iron Rails, Philadelphia | 24.00 | 24.00 | 21.50 | 19.50 |
| O. Car Wheels, Chicago | 19.00 | 18.00 | 18.00 | |
| O. Car Wheels, Philadelphia | 17.50 | 17.50 | 17.00 | 16.50 |
| Heavy Steel Scrap, Chicago | 16.50 | 16.50 | 14.50 | 13.50 |

FINISHED IRON AND STEEL:

| | | | | |
|---------------------------------------|------|-------|------|------|
| Refined Iron Bars, Philadelphia | 1.92 | 1.82 | 1.72 | 1.40 |
| Common Iron Bars, Chicago | 1.85 | 1.85 | 1.75 | 1.55 |
| Common Iron Bars, Pittsburgh | 1.80 | | 1.60 | 1.40 |
| Steel Bars, Tidewater | 1.75 | 1.75 | 1.67 | 1.55 |
| Steel Bars, Pittsburgh | 1.60 | 1.60 | 1.55 | 1.45 |
| Tank Plates, Tidewater | 1.78 | 1.78 | 1.78 | 1.65 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.50 |
| Beams, Tidewater | 1.85 | 1.85 | 1.75 | 1.75 |
| Beams, Pittsburgh | 1.70 | 1.70 | 1.60 | 1.60 |
| Angles, Tidewater | 1.75 | 1.75 | 1.75 | 1.75 |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.60 |
| Skelp, Grooved Iron, Pittsburgh | 1.95 | 1.95 | 1.80 | 1.70 |
| Skelp, Sheared Iron, Pittsburgh | 2.00 | 2.00 | 1.80 | 1.75 |
| Sheets, No. 27, Pittsburgh | 3.00 | 3.00 | 3.00 | 3.25 |
| Barb Wire, f.o.b. Pittsburgh | 2.90 | 2.90 | 2.90 | 2.90 |
| Wire Nails, f.o.b. Pittsburgh | 2.05 | 2.05 | 2.05 | 2.30 |
| Cut Nails, Mill | 1.95 | 1.95 | 1.95 | 2.00 |

METALS:

| | | | | |
|---|-------|-------|--------|-------|
| Copper, New York | 12.00 | 12.12 | 12.37½ | 17.00 |
| Spelter, St. Louis | 4.12½ | 4.10 | 4.15 | 3.72½ |
| Lead, New York | 4.10 | 4.10 | 4.10 | 4.37½ |
| Lead, St. Louis | 4.00 | 4.02½ | 4.05 | 4.22½ |
| Tin, New York | 26.00 | 26.62 | 25.25 | 26.15 |
| Antimony, Hallett, New York | 8.00 | 8.00 | 8.00 | 8.75 |
| Nickel, New York | 50.00 | 50.00 | 50.00 | 55.00 |
| Tin Plate, Domestic, Bessemer, 100 pounds, New York | 4.19 | 4.19 | 4.19 | 4.19 |

Chicago.

FISHER BUILDING, March 26, 1902.—(By Telegraph.)

The feature of the week has been the continued placing of orders by the implement manufacturers. These orders have so far been confined to the usual Bar mill products, including certain specialties which are always covered by season contracts. This class of buyers have not yet entered other fields, such as Sheets, in which considerable business may be expected to come up later in the spring. It is believed that many other large Bar consumers have placed good orders for future delivery to take advantage of the comparatively low price at which these orders can be entered at the present time. The demand in other lines continues heavy, and in numerous instances cannot be satisfied because of the sold up condition of producing establishments.

Pig Iron.—All kinds of spot Iron are in sharp demand at fancy prices, and a fair business has been done in Foundry Iron for delivery during the last half of the year. The Malleable foundrymen are still buying for the same delivery, but quite a number have not decided whether it is best for them to wait and take their chances on the market or to place their orders now. The local furnace companies have advanced prices another 50c., but the Southern companies have not advanced their schedule, although they will take no orders. This

applies to the largest Southern companies, as others are easily getting \$1.50 per ton above their schedule. An important step was taken last week by the Southern companies in changing their ton from 2268 to 2240 pounds. We quote as follows:

| | |
|---|--------------------|
| Lake Superior Charcoal..... | \$21.00 to \$22.00 |
| Local Coke Foundry, No. 1..... | 19.00 to 19.50 |
| Local Coke Foundry, No. 2..... | 18.50 to 19.00 |
| Local Coke Foundry, No. 3..... | 18.00 to 18.50 |
| Local Scotch, No. 1..... | 19.00 to 19.50 |
| Ohio Strong Softeners, No. 1..... | 20.10 to 20.35 |
| Southern Silvery, according to Silicon..... | 16.90 to 18.65 |
| Southern Coke, No. 1..... | 16.40 to 18.15 |
| Southern Coke, No. 2..... | 15.65 to 17.15 |
| Southern Coke, No. 3..... | 15.15 to 16.65 |
| Southern Coke, No. 1 Soft..... | 16.40 to 18.15 |
| Southern Coke, No. 2 Soft..... | 15.65 to 17.15 |
| Foundry Forge..... | 14.65 to 16.15 |
| Southern Gray Forge..... | 14.65 to 16.15 |
| Southern Mottled..... | 14.65 to 16.15 |
| Southern Charcoal Softeners, according to Silicon..... | 18.00 to 18.50 |
| Tennessee Silicon Pig..... | 18.65 to 19.15 |
| Alabama and Georgia Car Wheel..... | 22.65 to 23.15 |
| Malleable Bessemer..... | 19.00 to 19.50 |
| Standard Bessemer..... | to 20.00 |
| Jackson County and Kentucky Silvery, 8 per cent. Silicon..... | 19.10 to 19.50 |

Bars.—While the implement manufacturers have placed more heavy orders during the week it is understood that some of the largest companies are still conducting negotiations, so that further important business is expected. A great deal of tonnage has also been placed by miscellaneous buyers, and the leading Bar manufacturers are having their capacity sold far into the future. It is stated that some of the largest Bar makers have sold their entire product up to July of next year. The enormous business which has been booked has concentrated into a short time the contracting which usually runs over a long period, so that a quiet condition of affairs is expected after April 1. The tonnage placed during the week covered large quantities of Bar Iron as well as Soft Steel Bars. Mill shipments are quoted at 1.85c. to 1.90c., Chicago, for Common Iron; 1.75c. to 1.90c. for Soft Steel Bars; 2.10c. to 2.20c., base, for Hoops, and 2.25c. to 2.40c., base, for Angles. Jobbers find no abatement in the demand from their customers. They further report the continued receipt of orders from buyers who usually procure their supplies direct from the mills. Small lots are held at 2c. to 2.10c. for Bars, and 2.45c. to 2.50c., base, for Hoops.

Structural Material.—The scarcity of Shapes is illustrated by the experience of a railroad company contemplating building a large number of cars in their own shops this spring and summer. The plan cannot be carried out, because it is impossible to secure the Channels necessary. The local Structural yards are having a heavy demand from important consumers of Shapes who are compelled to turn to this source of supply. High prices are realized. Projectors of several large buildings find that it will be impossible for them to begin work this year. Manufacturers cannot be found who will agree to make deliveries earlier than eight to nine months. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 1.75c. to 1.85c. Small lots of Beams and Channels from local yards are quoted at 2.50c. to 3.50c.; Angles, 2.50c. to 3.50c. rates; Tees, 2.55c. to 3.50c. rates.

Plates.—Orders for mill shipment are coming forward for good quantities, and the local mills are now unable to make deliveries earlier than 60 days. Jobbers are likewise finding a heavy volume of business, which promises to continue for an indefinite time. They report quite a tonnage desired for prompt shipment, on which they are able to secure \$1 or \$2 per ton above mill prices. Mill shipments are quoted as follows: Tank Plate, ¼-inch and heavier, 1.75c. to 1.80c., Chicago; Flange, 1.85c. to 1.95c.; Marine, 1.95c. to 2.05c. Jobbers are selling small lots from store at 2c. to 2.10c. for Tank and 2.25c. for Flange, with the usual extras for heads, segments, lighter gauges, &c.

Sheets.—A fair demand is noted for mill shipments of Black Sheets, but a heavy business is doing in Galvanized. Mills are making reasonably good delivery on Black Sheets, but orders booked are evidently satisfactory, as prices are well maintained. Sheets of heavy gauges are scarce and mills are much in arrears. Mill

shipments of No. 27 Black Sheets are quoted at 3.10c. to 3.20c., and Galvanized at 70, 10 and 5. Jobbers quote small lots at 3.35c. to 3.45c. for No. 27 Black, and 70 and 5 for Galvanized.

Cast Pipe.—The demand is brisk, as the rapid development of spring weather over the West promises an earlier season than usual. The tonnage now being placed is reported not to include any very large lots, but the orders for small quantities are numerous. Prices are advancing with the increased cost of Pig Iron, and manufacturers quote as follows on Water Pipe: Four-inch, \$30; 6-inch, \$29; 8-inch and larger, \$28.

Merchant Pipe.—The active buying which had been stimulated by the recent slight advance is now falling off. Most buyers appear to have covered their immediate wants. Carload lots are quoted as follows, random lengths: Black, ½ to ½ inch, 56½ off; ¾ to 12 inches, 63½ off; Galvanized, ½ to ½ inch, 43½ off; ¾ to 12 inches, 50½ off.

Boiler Tubes.—Trade is excellent, but prices are unchanged. Quotations are as follows:

| | Steel. | Iron. |
|--------------------------|--------|-------|
| 2¾ to 5 inches..... | 57½ | 47½ |
| 1¾ to 2½ inches..... | 50 | 40 |
| 1 to 1½ inches..... | 35 | 30 |
| 6 inches and larger..... | 52½ | 45 |

Merchant Steel.—The business of the week has largely consisted of season contracts placed by implement manufacturers. The general demand is fair, but presents no special feature. Mill shipments are quoted as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.95c. to 2.10c.; Open Hearth Spring Steel, 2.45c. to 2.55c.; Toe Calk, 2.25c. to 2.40c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 50 off in carload lots. Ordinary grades of Crucible Tool Steel are quoted 6½c. to 7c. for mill shipments; specials, 12c. upward.

Rails and Track Supplies.—Some inquiry is noted for heavy Sections of Steel Rails and it is expected that Eastern mills will be able to secure further Western business for delivery late in the year. The interesting fact develops that some of the railroad companies having contracts for Rails for spring delivery are willing to dispose of at least a portion of what they had purchased. Resales are thus reported on the basis of \$31, Pittsburgh. The regular quotation on Heavy Sections continues at \$28, Chicago, and Light Sections at \$32 to \$37. Fastenings are quoted as follows, in carload lots: Splice Bars or Angle Bars, 2c.; Spikes, 2.30c. to 2.40c.; Track Bolts, with Hexagon Nuts, 3.10c. to 3.20c.; Square Nuts, 2.95c. to 3.05c.

Billets.—Open Hearth Forging Billets are quoted at \$40 for April or May, \$35 for July and \$33 for September. Sales are confined to carload lots.

Old Material.—The market appears to be more plentifully supplied with certain classes of Old Material. It is ascertained with some degree of assurance that railroad companies have been anticipating their accumulation of Old Material, and have made sales against what they expect to see. The demand is considerably less than it has been, except in special cases in which dealers were obliged to make purchases to cover their sales. Quotations on such material are quite difficult to make, as the range on transactions has been very wide. The following are approximate quotations per gross ton:

| | |
|-------------------------------------|--------------------|
| Old Iron Rails..... | \$24.00 to \$25.00 |
| Old Steel Rails, mixed lengths..... | 17.50 to 18.00 |
| Old Steel Rails, long lengths..... | 24.50 to 25.00 |
| Heavy Relaying Rails..... | 29.00 to 30.00 |
| Old Car Wheels..... | 19.00 to 20.00 |
| Heavy Melting Steel Scrap..... | 16.50 to 17.00 |
| Mixed Steel..... | 13.50 to 14.00 |

The following quotations are per net ton:

| | |
|---------------------------------------|--------------------|
| Iron Fish Plates..... | \$21.00 to \$21.50 |
| Iron Car Axles..... | 24.00 to 24.50 |
| Steel Car Axles..... | 21.50 to 22.00 |
| No. 1 Railroad Wrought..... | 19.00 to 19.50 |
| No. 2 Railroad Wrought..... | 17.25 to 17.75 |
| Shafting..... | 18.50 to 19.00 |
| No. 1 Dealers' Forge..... | 15.00 to 15.50 |
| No. 1 Bushing and Wrought Pipe..... | 13.50 to 14.00 |
| Iron Axle Turnings..... | 13.00 to 13.50 |
| Soft Steel Axle Turnings..... | 12.50 to 13.00 |
| Machine Shop Turnings..... | 12.50 to 13.00 |
| Cast Borings..... | 8.00 to 8.50 |
| Mixed Borings, &c..... | 8.00 to 8.50 |
| No. 1 Bolders, cut..... | 13.00 to 13.50 |
| Heavy Cast Scrap..... | 14.00 to 14.50 |
| Stove Plate and Light Cast Scrap..... | 11.00 to 11.50 |
| Railroad Malleable..... | 15.00 to 15.50 |
| Agricultural Malleable..... | 13.00 to 13.50 |

Metals.—Copper shows no change in this market, carload lots of Lake being quoted at 13c. and Casting brands at 12½c. Pig Lead is in fair demand at 4.05c. for Desilverized and 4.15c. for Corroding in 50-ton lots. Old Metals are moving quite freely. Selling prices on small lots are as follows: Heavy Cut Copper, 11½c. to 12c.; Red Brass, 11½c. to 12c.; Copper Bottoms, 10½c. to 11c.; Pipe Lead, 3.90c.; Zinc, 3.25c.

Coke.—While West Virginia Coke is somewhat more plentiful the supply coming from the Connellsville region is still scanty, and foundrymen are constantly annoyed by running short. The blast furnaces are also unable to accumulate any stock, and if anything should occur to interrupt transportation quite a number of local stacks would be banked. Spot Coke sells at \$5.50 to \$6, and contracts are quoted on the basis of \$5.25 for Standard Connellsville 72-hour Foundry Coke.

Philadelphia.

FORREST BUILDING, March 25, 1902.

The only apparent change during the past week has been the increased scarcity of Pig Iron and a gradual moving up of prices. Manufacturers dislike to see higher figures, but buyers bid against each other in a way that makes it impossible to keep prices down, the average advance during the week having been about 50c. per ton on Pig Iron. Some Iron is arriving from abroad, but it was sold to arrive, so that it gives no relief except to the parties who secured it in advance. Further shipments are expected, but at the prices now ruling in Europe there is no probability that any large tonnage can be arranged for. It is, of course, extremely difficult to say how long it will be before normal conditions are restored, but there is not much chance for it this side midsummer, and even then there is no reason to expect more material than is enough to go around. The general impression is that toward fall the production will be considerably increased, in view of which a conservative position is considered advisable, although if crops turn out a fair average consumption will be maintained at a high limit, and the only chance for an easier Iron market will be a production running at the rate of pretty nearly 20,000,000 tons per annum. Under any circumstances, however, it is impossible to see anything but a strong and active market for a long time to come, as nearly all the ultimate consumers are about as crowded with work as the original producers are. There does not appear to be a weak link in the entire chain, so that while prices may not advance much, there is very little probability that they will decline. Still, as we have already stated, a great deal will depend on the character and extent of the wheat and corn crops. A crop failure, or a partial failure, might mark the culmination of five years of almost unbroken prosperity, while a successful crop year would certainly permit of an extension of activity and prosperity well into another year.

Pig Iron.—The situation has not improved from a buyer's standpoint. Metal is harder to get than it has been at any time during the year, and prices are gradually being worked to a higher level. It is impossible to give exact figures, as every seller makes his own price, but \$19 would be an inside rate for No. 2 X Foundry, with some sales at \$19.50 to \$20, the latter figures for April and May shipments, the former for June and July. For the third quarter of the year a few orders might be taken at \$18.50 to \$19, and for the entire six months probably \$18 to \$18.50 would be considered fair quotations. But the market (if such it can be called) is so uncertain that at the best it can only be guessed at, as changes are liable to occur at any moment. Several leading concerns have stopped quoting for the present. They are sold close up to midsummer, and, with a fair sprinkling of orders for later months, they consider it a good business policy to leave a portion of their product disengaged, in their own interests as well as in that of the buyers. It is believed that prices will be no higher, and it is hoped that they will be somewhat lower, but there is no data to work on, so that it is guess any way. At the present time the following figures represent the

market as nearly as possible for deliveries in this and nearby districts:

| | Deliveries to July. | July to December. |
|--------------------------|---------------------|--------------------|
| No. 1 X, Foundry..... | \$20.00 to \$21.00 | \$19.00 to \$20.00 |
| No. 2 X, Foundry..... | 19.25 to 20.00 | 17.50 to 18.00 |
| No. 2, Plain..... | 18.75 to 19.00 | 17.00 to 17.50 |
| Standard Gray Forge..... | 18.00 to 18.25 | 17.25 to 17.50 |
| Ordinary Gray Forge..... | 17.25 to 17.75 | 16.50 to 17.00 |
| Basic (Chilled)..... | 19.00 to 19.50 | 18.00 to 18.25 |
| Bessemer | to | 19.00 to 19.50 |

Billets.—There is a great scarcity of Steel, so that prices are merely nominal at about \$33 to \$33.50, but the mills are so far sold ahead that there is hardly anything to be had even for long deliveries.

Plates.—Mills are gradually increasing their lines, and they have probably more orders on their books than they ever had before. The capacity for production is increasing, however, so that they are making fairly prompt deliveries, but as we said before, the incomings are larger than the outgoings. Prices firm as last quoted, as follows for Philadelphia and nearby deliveries: Universals, 1.80c. to 1.85c.; Sheared, 1.80c. to 1.90c.; Flange, 1.90c. to 2c.; Fire Box, 2c. to 2.10c.; Marine, 2.05c. to 2.10c.

Structural Material.—Not a word more can be said than what has been in recent reports. The scarcity is so great, however, that imports are likely to be made so as to help out. Nominal prices unchanged, but actual selling prices from \$5 to \$10 above the regular quotations, which are as follows: Angles, 1.75c. to 1.85c.; Beams and Channels, 15-inch and upward, 1.75c. to 1.85c.

Bars.—Prices in the Eastern markets are a tenth higher—viz., 1.92c. for carload lots and upward, and even at that figure there is a strong demand. Raw Material is very scarce, however, and the advance is more than lost by the higher cost of production. Steel Bars are supposed to be 1.72c., but before an order can be placed bids have to be considerably above that figure. The rates for Iron Bars may be given as 1.92c. for carload lots, and Steel Bars 1.80c. to 1.85c.

Sheets.—The demand is very active, and it is regarded as almost certain that great difficulty will be met with in making deliveries promptly. For the present prices for carload lots and upward of ordinary Sheets would be about as follows (and a tenth to two-tenths more for best qualities), viz.: No. 10, 2.30c. to 2.40c.; No. 14, 2.60c.; Nos. 16 and 17, 3c.; Nos. 18-21, 3.10c.; Nos. 26, 27, 3.30c. to 3.40c.; No. 28, 3.50c.

Old Material.—There has been no such scarcity for years, and in consequence prices are considered as disproportionately high, but there is no alternative but to pay the price or do without the material. Bids and offers are about as follows for deliveries in buyers' yards: Low Phosphorus Scrap, \$25 to \$26; Choice Railroad Scrap, \$23 to \$23.50; Light, Ordinary, \$14 to \$15; Light, Forge, \$16 to \$17.50; Machinery Cast, \$16.50 to \$17.50; Heavy Melting Steel, \$21 to \$22; Iron Rails, old, \$24 to \$26; Wrought Turnings, \$15 to \$16; Choice Heavy, \$16 to \$16.50; Cast Borings, \$9 to \$10; Old Car Wheels, \$17.50 to \$18; Iron Axles, \$26 to \$27; Steel, \$22 to \$23.

The Lukens Iron & Steel Company announce that on April 1 they will move to more commodious quarters in the Arcade Building (new Pennsylvania Railroad Building), Broad and Market streets, and will occupy rooms Nos. 401, 405, 407, 408 and 409.

Jas. G. Lindsay & Co. also announce that on Thursday, the 27th inst., they will move into their new offices, Nos. 1019, 1020 and 1021 Arcade Building, Fifteenth and Market streets.

St. Louis.

CHEMICAL BUILDING, March 26, 1902.—(By Telegraph.)

Pig Iron.—The Pig Iron market at this center maintains a firm tendency in the price-list, but the volume of demand has slackened considerably, and except in the matter of inquiry for material for the second half, orders are on a light scale. Any quick Iron that may be on the market is snapped up and at advances from quotable prices. We continue to quote at rate of \$12, Birmingham, for No. 1, which is the basis the larger interests hold to, although Iron in quantity just now at any price is very hard to get. Shipments come for-

ward slowly and much complaint on this score is heard. We quote for cash, f.o.b. St. Louis, as follows:

| | |
|------------------------------|--------------------|
| Southern, No. 1 Foundry..... | \$16.00 to \$16.50 |
| Southern, No. 2 Foundry..... | 15.25 to 15.75 |
| Southern, No. 3 Foundry..... | 14.75 to 15.25 |
| Southern, No. 4 Foundry..... | 14.25 to 14.75 |
| No. 1 Soft..... | 15.75 to 16.25 |
| No. 2 Soft..... | 15.25 to 15.75 |
| Gray Forge..... | 14.25 to 14.75 |

Bars.—The demand and inquiry for Iron and Steel Bars are still of unusual volume. Jobbers report a very large trade and look for an increase in the demand as the season advances. We quote from mills: Iron Bars at 1.90c., Steel Bars at 1.90c. to 2c. Jobbers quote Iron Bars at 2c. and Steel Bars at 2.10c., full extras.

Rails and Track Supplies.—A heavy demand and inquiry are the conditions ruling in the market for Rails and Track Supplies and we can note no change in the matter of prices. We quote Splice Bars, 1.75c. to 1.95c.; Bolts, Square Nuts, 2.75c. to 2.90c.; with Hexagon Nuts, 2.90c. to 2.95c.; Spikes, 2c. to 2½c.

Sheets.—A good active market for Sheets of all grades is to be reported and prices are on a firm basis. Jobbers quote Stove Pipe size, No. 27, at 3.60c. to 3.65c., and Galvanized Sheets, 70 to 70 and 5 off in round lots.

Angles and Channels.—The jobbers report a demand of large volume for Small Angles and Channels, and prices are on the same basis as last quoted. For material of this class 2.30c., base, is asked.

Pig Lead.—In the market for Pig Lead the conditions are said to be of a quiet order, but prices are on a firm basis. We quote Chemical at 4c. and Desilverized at 4.05c.

Spelter.—The market for Spelter is fairly active and the quality of demand is said to be of a very substantial character. Quotations at 4.12½c. to 4.15c. are made and offerings are light.

Pittsburgh.

(By Telegraph.)

HAMILTON BUILDING, March 26, 1902.

Pig Iron.—The market continues very firm, and furnaces are getting almost a full supply of Coke, and output of Pig Iron in March will be much heavier than in February. Several of the leading Steel companies have bought round lots of Iron in the past week, and we can report sales of 50,000 to 60,000 tons of Bessemer at prices ranging from \$16.50 to \$17.50 and higher at Valley furnace. There have also been sales of a moderate tonnage of Basic Iron at about \$16.50, at furnace. The leading consumer has bought heavily of Forge Iron, and the market is very firm at \$18 to \$18.25, Pittsburgh. There is also an active demand for Foundry Iron, the foundries being full of work and using more metal than ever before. Prompt Foundry Iron is very scarce and brings premiums over prices on contracts for extended delivery. The Pig Iron market is somewhat difficult to quote, but Standard Bessemer Iron may be said to be ruling anywhere from \$16.50 up to \$17.50 and higher at furnace. The association has no official price on Iron, as they have no inquiries at present. Northern Forge is \$18 to \$18.25; No. 2 Foundry, \$18.50 to \$18.75 on contracts for extended delivery, while prompt No. 2 has sold at \$19.50 to \$20, delivered.

Steel.—There is a fair inquiry, but mostly for small lots. Steel is as scarce as ever, and brings high prices. Bessemer Billets are \$31 to \$31.50, at maker's mill, while Sheet Bars are \$33 to \$34, delivered. We note a sale of 2500 tons of 4 x 8 inch domestic Billets at \$31.50, maker's mill, and also 1000 tons of foreign Sheet Bars at a price equal to about \$34, Pittsburgh.

Bar Iron.—The mills east and west of Pittsburgh rolling Iron Bars have advanced their price to 1.80c., Pittsburgh, for shipment east and west of Pittsburgh. It is probable one or two large interests that roll Iron Bars, and who have not yet advanced their price, will do so within a few days.

(By Mail.)

The past week has probably been the quietest one in the iron trade for some months, but this is really welcomed by the mills, as it will give them a chance to catch up on back orders, which is really very much desired. A fair amount of tonnage in all kinds of Iron and Steel is being placed, but there is not the rush to buy material at the present time that has been such a characteristic of the market for some months. The large Steel interests are still buying Bessemer Pig Iron wherever it can be found, and probably 50,000 to 60,000 tons have been sold in the past week. There is a wide range in prices of Bessemer Iron, some of this tonnage having been sold as low as \$16, at furnace, which is the association price, while on the other hand there have been sales of Bessemer Iron by outside furnaces at very close to \$18, at furnace. Gray Forge is very strong at \$18 to \$18.25, Pittsburgh, and No. 2 Foundry is all the way from \$19 to \$20, Pittsburgh, depending on the contract and deliveries wanted by the buyer. Finished Iron and Steel has not shown much change during the week, but heavy tonnage is being placed right along in Structural Material and Steel Bars. The market is very strong, but there has been no material change in prices. The demand of blast furnace labor for an eight-hour day after May 1 is causing some apprehension and there may be labor troubles about that date, but it is hoped the matter will be adjusted without trouble. The car situation is much better and blast furnaces are having very little trouble in getting Coke as fast as needed. For this reason output of Pig Iron this month will probably show a heavy increase over February.

Spelter.—The market is firmer and some difficulty is reported by consumers in getting prompt deliveries. We quote Prime Western grades of Spelter at 4.20c. to 4.25c., Pittsburgh.

Steel Rails.—The order for the Canadian Pacific, said to be about 20,000 tons, for which American mills had the inquiry, but could not fill, has been placed in Germany. A small order of about 2,000 tons was placed by a Western road with the Carnegie Steel Company last week. The big orders were all placed some time ago and current business is light and for small lots only. We quote at \$28, at mill, for Standard Sections.

Ferromanganese.—We make no change in quotations, which are \$50 a ton for German Ferro in large lots and \$52 to \$55 for domestic, depending on the order.

Sheets.—The demand for Galvanized Sheets is much larger than for Black, but the market on both is very firm. Most of the Sheet mills have all the tonnage they can fill in the next two or three months. We quote No. 27 Black Sheets box annealed, one pass through cold rolls, at 3c. and No. 28 at 3.10c. for carload lots. On large contracts it is probable these prices would be shaded about \$2 a ton by some mills. Jobbers quote small lots of No. 27 from store at 3.10c. to 3.15c. and No. 28, 3.15c. to 3.25c. Galvanized Sheets are in very active demand and are held at 70, 10 and 5 off in carloads and 70 and 10 to 70 and 5 in small lots. These prices are f.o.b. maker's mill.

Muck Bar.—The heavy advance in prices of Forge Iron and its scarcity have strengthened the Muck Bar market and high prices are being quoted. We quote Standard grades of Muck Bar at \$32 to \$32.50, delivered buyer's mill in the Pittsburgh district.

Bars.—It is claimed that upward of 200,000 tons of Steel Bars have been placed by large consumers within the past two weeks at the official price of 1.50c. at mill. After April 1 the market is to be advanced to 1.60c. minimum. For ordinary orders we quote Steel Bars at 1.60c., at mill, while small lots bring 1.70c. to 1.75c. All specifications for less than 2000 pounds of a size are subject to the following differential extras: Quantities less than 2000 pounds, but not less than 1000 pounds, 0.05c. per pound extra; quantities less than 1000 pounds, but more than 500 pounds, 0.15c. per pound extra; quantities 500 pounds or less, 0.25c. per pound extra; the total weight of a size to determine the extra, regardless of length. We note a heavy demand for Iron Bars, which are really scarcer than Steel. The official price of Iron Bars is 1.70c., Pittsburgh, for shipment East and West, but some of the Eastern mills have recently

sold at 1.82½c., delivered in this market. This high price was obtained for the reason that the seller made prompt shipment.

Plates.—On account of the scarcity and high prices of Steel Blooms some of the mills in the Plate Association are urging an advance in prices. Two or three of the leading interests, however, have taken the position that while an advance is fully warranted by existing conditions in the Raw Material market, yet, if made, it might have the effect of curtailing demand. For this reason no change in prices was made at the meeting of the Plate mills this month, but it is reported that one or two of the Eastern mills have advanced their prices \$2 a ton. If present conditions in the Steel market continue an advance in Plates may possibly be made at the next meeting of the Plate Association. Tonnage in Plates is steadily improving, and some of the large mills are comfortably filled for the next three or four weeks. Prices are being firmly held, and we quote: Tank Plate, ¼ inch thick and up to 100 inches in width, 1.60c. at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price to 3c. Plate more than 100 inches wide, 5c. extra per 100 lbs. Plate 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms, net cash in 30 days. Small lots of Plates from store are sold on the basis of 1.70c. to 1.75c. for Tank, with the usual advances for the higher grades.

Structural Material.—Some heavy contracts have recently been placed. Two or three large buildings in the East will take from 8000 to 10,000 tons, while bridge work taken by American Bridge Company will require nearly double that tonnage. There is still a great scarcity of Structural Steel, and premiums of as much as \$5 a ton or more are being paid for prompt shipment. Some tonnage has already been placed for delivery during next winter. It should be noted that two of the Eastern mills, Passaic and Phoenix, have for some time been quoting on the basis of 1.80c., Pittsburgh, for Beams and Channels, up to 15 inches. As yet there has been no official change in prices, and we quote: Beams and Channels, up to 15-inch 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inches, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.50c., half extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh. Actual prices on Beams and Channels are from 1.80c. to 2c., while small lots for prompt shipment bring 2.25c. and higher.

Merchant Steel.—The agricultural implement makers have placed heavy contracts, running all through this year, and these, with current business, will keep the mills filled up for some months. Prices are firm, but without change. We quote Toe Calk Steel at 2.10c., base, in large lots and up to 2.25c. for small lots. Tire Steel is 1.80c. to 1.90c. and Open Hearth Spring 2.25c. to 2.50c. Prices on Cold Rolled and Cold Drawn Shafting are 50 per cent. off in carloads and 45 per cent. in less than carloads, delivered to all points east of the Mississippi and north of the Ohio rivers. Tool Steel, ordinary grades, is 6½c. to 7c., and special grades 12c. and upward, on which the mills allow freight.

Merchant Pipe.—A heavy tonnage is being placed and the recently adopted prices are, we are advised, being firmly held. Discounts on carloads to jobbers are as follows:

| Merchant Pipe. | Black. Per cent. | Galvd. Per cent. |
|------------------------------|---------------------|---------------------|
| ¼ to ½ inch, inclusive..... | 60 | 48 |
| ¾ to 12 inch, inclusive..... | 67 | 55 |

Skelp.—There is a heavy demand for both Iron and Steel Skelp, and the market is higher and very firm. We quote Iron Skelp at 1.95c. to 2.10c., and Steel is held at about the same prices.

Boiler Tubes.—There is a fair demand, but it is being curtailed to some extent by the boiler makers' strike. Discounts on small lots are as follows:

| Boiler Tubes. | Up to 22 feet. Per cent. |
|---|-----------------------------|
| Steel. | |
| 1 to 1½ inch, inclusive..... | 47½ |
| 2½ inch to 5 inch, inclusive..... | 63½ |
| 1½ inch to 2½ inch and 6 inch to 13 inch, inclusive.. | 60 |

| | |
|------------------------------------|-----|
| Iron. | |
| 1 inch to 1½ inch and 2½ inch..... | 43½ |
| 1½ inch to 2½ inch..... | 43 |
| 2½ inch to 13 inch..... | 53 |

Coke.—The railroads are moving Coke faster than for several months. The *Courier* reports the output last week as 215,067 tons. Strictly Connellsville Furnace Coke on contracts running to July 1 is \$2.25 a ton, but for second half it is understood the price will be \$2.50 a ton; 72-hour Foundry Coke is \$2.75 to \$3 a ton on contract, but up to \$3.50 a ton has been paid for prompt shipment.

Iron and Steel Scrap.—Prices on all kinds of Scrap are very high, and consumers are going slow, believing that perhaps the top of the market has been reached. With so many Open Hearth Steel plants being built it is a serious question whether the supply of Scrap will be large enough to supply them all. Heavy Melting Stock is held at \$19 to \$19.50 gross ton and sales are reported at these prices. No. 1 Wrought Scrap is \$18.50 to \$19 net ton, and Old Iron Rails \$23 to \$24 gross ton.

Cleveland.

CLEVELAND, OHIO, March 25, 1902.

Iron Ore.—During the week just closed the United States Steel Corporation, through their Ore handling arm on the chain of lakes, entered a contract with a number of vessel owners for the transportation of 1,200,000 tons of Iron Ore, based upon a rate of 75c. from the head of the lakes to Ohio ports. This was a big surprise to most of the vessel owners, as the contract rate prior to that time had been 80c., and although the big shippers were striving diligently to break it down, few ever believed that any reduction would be made. With the contract mentioned the United States Steel Corporation will about have completed their contracts for the year, as they will depend upon the open market for the removal of the remainder of their Ore. Last season the United States Steel Corporation brought down the lakes 13,500,000 tons of Ore. A large quantity of this is still on the docks, and as a result the corporation can get along this year with the transportation of about 13,000,000 tons. The carrying capacity of the corporation fleet a year ago was 9,000,000 tons, which will be increased by 1,000,000 tons this year by the ability of the boats to make two additional trips this season by the promise of the season of navigation opening early in April. The carrying capacity of the trust fleet being increased to 10,000,000 tons and the company having 1,200,000 additional tonnage under charter, there will remain but 1,800,000 tons yet to be moved, which will be cared for by wild boats. The other shippers have taken no tonnage as yet, except, of course, those smaller dealers who have taken 4,000,000 tons carrying capacity on the 80c. basis. The fact is quite apparent now that there will be an unusual quantity of Ore on the docks this spring, which, with the early opening of the season of navigation, gives ample assurance that there will be enough tonnage and to spare to move any quantity of Ore this season. In fact the shipment will be limited only by the dock capacity.

Pig Iron.—The Basic and Bessemer Pig Iron producers are likely to part company as to prices on sales of their Irons for the fourth quarter delivery. No sales have been made by the Basic producers so far, nor has the Bessemer Association done anything as yet. The Basic producers, however, have had inquiries for material and have quoted a price considerably in excess of what has been asked until now—namely, \$16, Valley furnace. It is quite probable that future transactions will be on a basis of \$17 or above. The Bessemer Association is holding out against any advance, preferring to preserve business stability rather than to take quick profit and endanger thereby the continued activity in their line of trade. How far they will be able to maintain this attitude is a question, as some of the outside factors are much disposed to take better profits now and allow the future to take care of itself. Rumors have been abroad of late that some sales have been made already for the fourth quarter delivery as high as \$17, Valley furnace, but it is impossible to confirm

these reports here. The Bessemer Association is supporting its stand with the argument that there is enough Iron to go around and will be, and also that whatever shortage there may be in specific grades just now will be overcome with the pending solution of the transportation problem. The Coke supply has improved materially, and while the furnaces are able to collect no stocks to speak of as yet, they are nevertheless not forced to run so close as they have been doing since January. The foundry situation does not change much. There is no Iron on the market for sale, except a stray lot now and then, neither is there the rampant demand which showed itself a few weeks ago. The market is moving along steadily and the shipments are easier than they have been. Agricultural implement works are taking a great deal of Iron. Nominal quotations now are \$17 for No. 2 and \$17.50 for No. 1, Valley furnace, with premiums being offered on quick shipments.

Finished Material.—The spring trade on Sheets is now assuming large proportions. The buying did not start in with any vigor until about a week ago, but the trade has been so brisk that the mills are now reporting that they are selling up even with their productive capacity. The present pace being maintained, the mills are expecting that before another month the Sheet trade will be in the same predicament that the other trades are in—entirely sold up for the season. The outdoor season has just started in and the buying of middle weight Galvanized Sheets is a leader, and already there is talk of an immediate overselling of the medium gauges, from 14 to 17. Sales here are mostly out of store, upon which the base price of from 3.45c. to 3.60c. for No. 27 holds good on one pass cold rolled, with 0.10c. extra being asked for full cold rolled. Mill sales on the same grade are made at about 3c. The buying of Structural Material would continue at the pace it has maintained until now were there any Steel for sale, but the larger mills are not taking new business, especially from any one who might show a disposition to store it for speculative purposes. Even the small uncovered capacity held for an emergency is pretty well taken up, and it is apparent now that some orders will have to be carried over into 1903. The mills continue their quotation of 1.70c., while the store sales, which are as heavy as the stocks will permit, are made on the old basis of from 2¼c. to 3c. Some few sales of Bars are still being made in this territory on the lower scale of prices, and the knowledge that all such sales must be made on the basis of 1.60c. after April 1 is bringing to light much business that would have been done after that date. All of the mills have agreed to the advance, and the quotations will be marked up after this week. The quotations now being made are 1.60c., Pittsburgh, for Bessemer Steel Bars; 1.70c., Pittsburgh, for Open Hearth Steel Bars and Iron Bars, all being shaded on certain contracts. The Plate trade is more active now than it has been for months, and the mills are reporting that their capacity has been well sold up for three months ahead on Sheared Plates, with the capacity on Universal product covered for a much longer period. The quotation does not change from 1.70c. The sale of Pipe has also been larger than earlier in the year, the advanced quotations not having curtailed the demand in the slightest. Pittsburgh basing discounts on Black Pipe are now 60 and 67 off list and on Galvanized Pipe are 48 and 55 off list. All of the mills are reporting less difficulty in making shipments this week, but no material relief has been experienced by the consumers, the time having been too short for the results to be general. The so-called independent mills are more affected, having been able to get shipments on Steel with which to keep their mills going. This was an application on a former contract. Nothing has been heard as yet from W. F. Bonnel of Cleveland, who went abroad to buy 40,000 tons of Sheet Bars and Billets for the independent sheet mills, and until something definite from that source is learned the mills will be a little perplexed as to whether they are to be able to continue producing at the present rate during the summer.

Old Material.—The market has quieted down greatly

and the speculator seems to have withdrawn, leaving the middleman easier as to his supply. The collectors have also showed a willingness to sell at more reasonable prices and the market is easier. The consumer still refuses to agree to advances. The quotations follow: No. 1 Wrought, \$18 net; Cast Borings, \$8 gross; Wrought Turnings, \$13.75 gross; Cast Scrap, \$14 net; Old Iron Rails, \$22 gross; Old Iron Axles, \$22 net; Steel Rails, \$17 gross; Old Car Wheels, \$17 gross.

Birmingham.

BIRMINGHAM, ALA., March 24, 1902.

It is, as yet, a difficult matter to arrive at satisfactory conclusions concerning the Iron market. An old saying is to the effect that every man carries in his face the indubitable signs of the character of life he lives, which can be correctly read by the observing critic. Usually that saying is applicable to the Iron market. On the face of it are usually signs that lead to correct conclusions. But they are lacking at the moment, and the face of the market is the face of a sphinx. The attitude of the larger sellers continues unchanged. The conservative position they took is still maintained, but it looks to your correspondent as if there is a feeling of restlessness springing up. No one enjoys the thought that his neighbor is obtaining \$13 for the same grade of Iron he is selling for \$1 less, and the neighbor will take the \$13 just as long as the buyers will pay it. They are doing it so far; and the warning that in time there will be enough Iron to go around falls on unheeding ears. The Iron they most want is that for deliveries, the most freely sold, and on which the larger interests can do the least toward relieving the tension. But they are doing the best they can, and distributing all they can squeeze out. "Many mickles make a muckle," and it is the small holes that are clamoring loudest to be filled up. Each one in its turn will get its quota. The demand during the past week has been fair. While not being keen it has been disposed to accept prices asked without question. The prices in some cases were pretty stiff, and on some sales they are withheld. One important lot was reported to your correspondent on the basis of \$13 for No. 2 Foundry, and delivery the second half of 1902. Other small lots were sold on the basis of \$13 for No. 2 Foundry, and even that was topped. It must be borne in mind that these sales, as a rule, are very limited, and because of delivery command the premium. At the same time there were sales on the basis of \$12 for No. 2 Foundry when buyers' wants as to grades and delivery could be met. The crucial test as to the maintenance of the *status quo* will be made, when, on April 1, as reported, Northern Irons will be advanced. This district would, as a whole, derive little, if any, benefit from any advance. It would simply weaken the influence on the market of those interests whose conservative action prevented a runaway market. Shipments are free as facilities permit, and stocks are decreasing daily. At the end of this month there will be less in furnace yards than has heretofore been known. But with the diminution of stocks will come increased output. The 200-ton furnace of Woodward Company is now at work, and early in April the large new furnace at Thomas will blow in. These will be reinforced by at least four more now out of blast, and all will be kept at work that can turn out Iron. Weather conditions will favor the assembling of material at the furnaces and favor an increased production. Of Steel there is little to be said. At the Steel mill there are changes being made to add to efficiency and additions demanded will be made. The mill is turned out the same character of product as reported last week. The new rolling mill so far as prospects are concerned grows brighter, and the promoters are imbued with confidence in their success. In truth, offers have been made to build it and run it as a private enterprise. At Pratt City a flour mill will soon be completed.

A new corporation have been formed under the name of the Ensley Development Company, capitalized at \$200,000, with Douglas H. Gordon, president of the International Trust Company of Baltimore, as president. Their objects are to buy and sell real estate and to aid

In the establishment of industries. The air is full of rumors of other enterprises in contemplation. Improvements are being actively prosecuted. The Tennessee Company have installed four up to date hoisting apparatus at their Iron mines and a water purifying plant for boilers at their Steel plant. The labor question has caused some inconvenience. The scarcity of labor here compelled a resort to other fields, and several carloads have been lately imported for work in the mines. The deficiency is not yet supplied. Skilled labor also is in good demand. Some of it is being turned to this district from the West, but not in sufficient numbers to supply the demand.

The coal operators report a good demand for their output. So far the season has been one of profit to them. Coke is still in good demand, and the shippers find ready sales. So far as profits are concerned, they too are "in the push."

There are so many things under way and in contemplation that one is puzzled as to selection for mention. In all lines there is a rush. All the shops and all the factories are full of work. Our area of trade is constantly increasing. Last week we shipped Soli Pipe to Seattle. We are fast becoming known to all the world and are drawing tribute from the four corners of the earth.

Cincinnati.

FIFTH AND MAIN STS., March 26, 1902.—(By Telegraph.)

People at all familiar with the Pig Iron market do not have to be told that the amount of Iron actually being sold is small. This is especially so for delivery prior to October 1. It may be set down as a flat statement that with the exception of odd lots, unexpected surpluses on lines considered sold, there is no Southern Iron for sale prior to the date mentioned. Under pressure it is possible now and then for a buyer to contract for a little Iron for prompt delivery, but whenever this is done it is more than reasonable to suppose that the furnace selling is simply taking advantage of a premium and selling Iron which ought to go on previous contracts. The situation as to prices is a complex one. All over the country a very large number of Pig Iron consumers, notably the general foundries, are interested in the quotations published in *The Iron Age* to the extent that their contracts are based upon the minimum Birmingham quotations furnished therein. These have been given for some time on the same basis as those given herewith—namely, \$12 for No. 2 Foundry. There is a feeling on the part of some of these buyers that this is an unfair quotation, and the claim is made that \$12 is not legitimate, because there is now no Iron selling on that basis—really there is no nearby Iron selling on any basis. This criticism has and has not a definite value, and the closer the situation is analyzed the more clearly is seen the impossibility of changing the minimum quotation. As far as the maximum figures go, they are flexible and could be raised to an almost extravagant amount were the dictum of every seller to be regarded as of governing value in the market. The situation in brief is this: The leading Southern interests have sold probably to or near the extent of their capacity on the basis of the minimum given herewith. What Iron they are now selling for any delivery and what bids they are making when they appear in competition are on this same basis. There is, to be sure, a little Iron selling for immediate delivery, ranging according to the ideas of the furnace that can produce it. These lots for any delivery within the next four or five months are small and scattered. We are quoted, for instance, No. 1 Soft Southern as high as \$16.50, Birmingham; No. 2 Foundry as high as \$15, Birmingham; Gray Forge as high as \$15, Birmingham, and so on throughout the list. The representatives of the leading interests are emphatic in the assertion that \$12 for No. 2 Foundry, Birmingham, still continues to be their quotation, and that for any advice to the contrary whenever and wherever they enter the market bids will be made on that basis. Under the circumstances a careful review of the market has resulted in the quotations given herewith, and

sellers and buyers will have to use their own discretion in the interpretation of the figures. It is a matter of remark that since a number of the users of Pig Iron, notably car works, have come to the conclusion that No. 4 Iron can be used to advantage by them a new market has been opened for the grades which formerly went almost exclusively to the rolling mills and Pipe works. This has given rise to the belief that the supply for rolling mills will be short when they enter the market to buy again, and on that account there is a speculative feeling that Gray Forge would at this date and at prevalent prices anywhere between the minimum and maximum be a good purchase with the view of unloading at a later date. Probably the only present difficulty that these speculators would encounter would be the one of purchasing the Iron at all for any reasonable delivery. As far as the Iron which is being sold for delivery prior to October 1 is concerned there is no definite market price, and the quotations given herewith are more especially intended to represent the ideas for the last quarter of the year. Freight rate from Hanging Rock district is \$1.10, and from Birmingham \$2.75. We quote, f.o.b. Cincinnati:

| | |
|--------------------------------|--------------------|
| Southern Coke, No. 1..... | \$15.25 to \$16.75 |
| Southern Coke, No. 2..... | 14.75 to 16.25 |
| Southern Coke, No. 3..... | 14.25 to 15.75 |
| Southern Coke, No. 4..... | 13.75 to 15.25 |
| Southern Coke, No. 1 Soft..... | 15.25 to 15.75 |
| Southern Coke, No. 2 Soft..... | 14.75 to 16.25 |
| Southern Coke, Gray Forge..... | 13.75 to 15.50 |
| Southern Coke, Mottled..... | 13.75 to 15.50 |
| Ohio Silvery, No. 1..... | 19.50 to 20.00 |
| Ohio Silvery, No. 2..... | 19.00 to 19.50 |
| Lake Superior Coke, No. 1..... | 18.60 to 19.10 |
| Lake Superior Coke, No. 2..... | 18.35 to 18.60 |
| Lake Superior Coke, No. 3..... | 17.85 to 18.10 |
| Southern Basic..... | to 16.25 |

Car Wheel and Malleable Irons.

| | |
|---|--------------------|
| Standard Southern Car Wheel, chilling grades..... | \$20.50 to \$21.00 |
| Standard Southern Car Wheel, No. 2..... | 20.00 to 20.50 |
| Lake Superior Car Wheel and Malleable..... | 21.00 to 22.00 |

Plates and Bars.—The market is quite active and ideas as to value seem to be bullish, though quotations are still unchanged. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.82c., with half extras; same in small lots, 1.85c. to 1.90c., with full extras; Steel Bars, in carload lots, 1.72c. to 1.80c., with half extras; same in small lots, 1.85c. to 1.90c., with full extras; Angles, in carload lots, 2c. to 2¼c.; Plates, ¼-inch and heavier, 2c.; 3-16 inch, 2.10c.; Sheets, No. 16, 1.85c. to 1.95c.

Old Material.—Under an active demand and in sympathy with the Pig Iron condition the market is higher. Dealers' buying prices, f.o.b. Cincinnati, are as follows, all quotations except No. 1 Wrought on basis of gross tons: No. 1 Wrought Railroad Scrap, \$18 to \$18.50; Cast Railroad and Machine Scrap, \$13.50 to \$13.75; Iron Axles, \$22.50 to \$23; Iron Rails, \$22.50 to \$23; Steel Rails, rolling mill lengths, \$22 to \$23; short lengths, \$15.50 to \$16; Car Wheels, \$18 to \$18.50.

Reforming the Drawback System.—On Wednesday next, April 2, the Ways and Means Committee of the House of Representatives will give hearings to manufacturers on the Lovering bill, No. 11,308, entitled "A Bill to Encourage the Sale and Exportation of Articles of Domestic Manufacture." It deals with a reform of the drawback system on ores, metals, hides or leather.

H. H. Dickey, president of the Maryland Sheet & Steel Company, Cumberland, Md., has purchased the South Cumberland plant of the American Tin Plate Company, and has organized the Maryland Rail Company, with a capital stock of \$50,000, to assume control of the property and operate it for the manufacture of steel rails. The new company are overhauling the plant preparatory to starting operations about May 1. The officers and directors are: H. H. Dickey, president; A. F. Baumgarten, vice-president; William C. Dickey of New York City, secretary; H. E. Weber, treasurer, and Nathan A. Taylor of the N. & G. Taylor Company of Philadelphia. Messrs. Baumgarten and Weber are respectively vice-president and secretary and treasurer of the Maryland Sheet & Steel Company.

New York.

NEW YORK, March 26, 1902.

Pig Iron.—The local market is quiet and very firm. For the third and fourth quarter Lehigh Valley and Schuylkill Valley furnaces are asking \$18 at furnace for No. 2 Foundry, equivalent to \$18.65 tidewater, while for early delivery considerably higher figures are being realized. Prices abroad are too high to allow importations at the present time. The Southern furnace interests held a meeting in this city this week and reaffirmed the price schedule for Western delivery. A movement to advance the price was given up. We quote for forward delivery, Northern Irons: No. 1, \$19.50 to \$19.75; No. 2 X, \$18.50 to \$18.75; No. 2, Plain, \$18 to \$18.25; Gray Forge, \$17.50 to \$17.75 at tidewater; Tennessee and Alabama brands, No. 1 Foundry, \$16.75 to \$17; No. 2 Foundry, \$16.25 to \$16.75; No. 1 Soft, \$16.75 to \$17; No. 2 Soft, \$16.25 to \$16.50; No. 3 Foundry, \$15.50 to \$15.75; No. 4 Foundry, \$15 to \$15.50; Gray Forge, \$15 to \$15.25.

Cast Iron Pipe.—The shops are filling up with work very rapidly and are engaged to full capacity well toward the summer. A number of large contracts have been placed in the West, while, in the East, Worcester has contracted for about 1500 tons and New York for a like amount. We quote \$28.50 to \$29.50, tidewater, per gross ton.

Steel Rails.—No business of any consequence has been closed. We continue to quote \$28 for Standard Sections at Eastern mill.

Finished Iron and Steel.—A very heavy volume of business is being placed in Structural Material for all purposes. The new Belmont Hotel, at Forty-second street, which will be the largest building of its kind, 22 stories high, with four stories below the level of the ground, will call for 7000 tons. A new hotel for Pittsburgh will require 5300 tons, while the new building of the National Bank of Chicago will call for 3500 tons. The contract has been placed for the new water pipe line for Newark. This calls for about 4600 tons of Plates. Prices are quoted as follows at tidewater: Beams, Channels and Zees, 1.75c. to 1.95c.; Angles, 1.75c. to 1.90c.; Tees, 1.80c. to 1.90c.; Bulb Angles and Deck Beams, 2c.; Sheared Steel Plates are 1.78c. to 1.85c. for Tank, 1.90c. to 1.95c. for Flange, 2c. to 2.05c. for Fire Box. Charcoal Iron Plates are held at 2.40c. for C. H. No. 1, 2.90c. for Flange and 3.40c. for Fire Box. Refined Bars are 1.80c. to 1.85c.; Soft Steel Bars, 1.80c. to 1.85c.

Metal Market.

NEW YORK, March 26, 1902.

Pig Tin.—Early in the week spot sold as high as 27c., but as a result of freer arrivals a sharp decline soon followed. To-day the spot price is the lowest for the week, with 26c. to 26¼c. Futures are quoted as follows: March, 25¾c. to 26c.; April, 25¼c. to 25¾c.; May, 25¼c. to 25¾c.; June, 25c. to 25¼c. Throughout the whole week business was very quiet. London continues to advance, and spot was cabled to-day £116 10s., while futures were quoted £114 2s. 6d. Thus far this month arrivals aggregate 2290 tons. Most of this is in direct steamers from the East, which are slow in discharging.

Copper.—The market is weak. Prices have gone off a fraction since last week. Very little business is being transacted, as consumers still show no disposition to enter the market. They are evidently supplied with metal purchased some time ago on contract. Lake is quoted 12c. to 12¼c. Both electrolytic and casting are offered at 12¼c. Exports are very heavy, amounting so far this month to 16,500 tons. Throughout the entire week the London market has been steadily declining. At the close to-day the cables named £52 10s. for spot and futures. Best selected has declined £1 10s. since our last writing. The quotation to-day is £56. The new rules of the New York Metal Exchange relative to the Copper trading contract were adopted by the Board of Managers, and trading under them will commence April 15.

Pig Lead.—The situation is without change. Business is dull and uninteresting. The American Smelting & Refining Company are still quoting 4.10c. for Desilverized 15 days and 4.12½c. for strict spot. London has declined to £11 6s. 3d.

Spelter.—Spot is still scarce and the quotation is now 4.35c. Shipments from the West are offered at 4.35c., but there is not much disposition to take hold. London declined to £17 10s.

Antimony.—Is unchanged. Hallett's is quoted 8c. to 8¼c.; Cookson's, 10¼c., and outside brands, 7½c.

Nickel.—There are several unconfirmed rumors regarding new developments in the Nickel industry. One report has it that the Canadian Copper Company and the Orford Copper Company, who refine the Canadian product, are to become affiliated with United States Steel Corporation interests. Another rumor says that the Orford Copper Company, Canadian Copper Company and the Nickel Corporation of London are to be consolidated. It is a fact that a movement of some sort is on foot. Details are, however, not divulged. Max Pam, who has the matter in hand, stated to a representative of *The Iron Age* to-day that nothing would be said officially until next Saturday, when a statement to the public will be made. Prices are unchanged. Ton lots are quoted at 50c.

Quicksilver.—Prices are on a basis of \$48 per flask of 76½ lbs. in lots of 56 flasks or more.

Tin Plates.—The market is entirely unchanged. The American Tin Plate Company are quoting for delivery until July 1 on a basis of \$4.19 per box of standard 100-lb. Cokes, f.o.b. New York, or \$4 f.o.b. Pittsburgh district. The Swansea quotation has declined 1½ pence to 13 shillings 7½ pence.

PERSONAL.

On April 1 D. Davies will succeed J. L. Brass as general manager of the Virginia Iron, Coal & Coke Company, and W. B. Bowles will succeed Mr. Davies as auditor.

Andrew Carnegie is engaged in the preparation of a book entitled "The Empire of Business," which it is expected will be issued at an early date.

F. R. Phillips of Philadelphia sailed this week for Europe, where he will remain for some months during the execution of numerous iron and steel contracts placed abroad by F. R. Phillips & Sons Company. He takes with him a number of large buying orders and expects to place a heavy tonnage for future delivery. Mr. Phillips also expects to close contracts on several propositions covering the installation of modern American labor saving machinery for steel plants and rolling mills.

Theo. C. Search of Philadelphia has published a letter in which he declines to be a candidate for the presidency of the National Association of Manufacturers. He has served six years.

Alexander C. Humphreys of the well-known firm of Humphreys & Glasgow, gas engineers, of New York, has given \$5000 to Stevens Institute, Hoboken, to establish a scholarship in memory of his son, Harold Humphreys, a graduate of the class of '90, who was drowned in the River Nile while making a wedding trip shortly after leaving the institute.

Arthur B. Clarke, who recently severed his connection as president with the Old Dominion Iron & Nail Works of Richmond, Va., sailed for the Mediterranean last week for a two months' absence. Mr. Clarke's name has been coupled recently with a project for a large new steel plant, at Richmond.

Henry B. Shields has resigned his position as superintendent of Mattie Furnace of the Girard Iron Company, Girard, Ohio.

C. M. Schwab, president of the United States Steel Corporation, expects to be in Homestead in June, when the C. M. Schwab Manual Training School will be dedicated. Mr. Schwab is defraying the cost for the buildings, and will have a number of guests with him in June for the dedication exercises.

William B. Schiller, first vice-president of the National Tube Company of Pittsburgh, has purchased a site in the East End, Pittsburgh, on which he will erect a stone and brick residence.

Thomas A. Harris has been appointed secretary of the Sharon Steel Company in the place of V. M. Delamater, resigned. Mr. Harris was formerly assistant treasurer of the company.

E. O. Hopkins, president of the Sloss-Sheffield Steel & Iron Company has tendered his resignation. It is probable that he will be succeeded by J. C. Maben.

F. H. Taylor, fourth vice-president of the Westinghouse Electric & Mfg. Company, Pittsburgh, has been elected second vice-president in succession to B. H. Warren, retired.

Iron and Industrial Stocks.

It is expected that the official circular to the stockholders of the United States Steel Corporation will be issued to-day or to-morrow. There has been a scramble to participate in the underwriting. It is variously stated that the underwriters are to pay 96 or 97 for the 5 per cent. bonds, of which very large amounts have already been sold at about par. The preferred stock itself has been very quiet and has displayed a downward tendency, the same being true of the common, which is supposed to be benefited by the conversion.

The fireworks of the market have been furnished by Colorado Fuel stock, under constant manipulation. The stock has fluctuated between 102 and 108 $\frac{1}{4}$ as the extremes during the week.

Pennsylvania Furnace Company.—At a special meeting of the stockholders of the Pennsylvania Furnace Company the following figures were submitted:

| Assets. | |
|--|-------------|
| Property (furnace, ore, rights, &c.)..... | \$2,097,000 |
| Livingood farm and real estate..... | 13,928 |
| Manager's house..... | 4,337 |
| Blowing engine..... | 11,618 |
| Railroad equipment..... | 5,573 |
| Supplies (estimated)..... | 16,013 |
| Notes receivable..... | 912 |
| Accounts receivable..... | 48,535 |
| Cash..... | 11,370 |
| Iron..... | 2,405 |
| Laboratory equipment..... | 460 |
| Total..... | \$2,212,154 |
| Liabilities. | |
| Capital stock..... | \$2,100,000 |
| Surplus..... | 64,591 |
| Notes payable..... | 10,000 |
| Accounts payable..... | 27,566 |
| Profit and loss..... | 9,996 |
| Total..... | \$2,212,154 |
| Statement. | |
| Pig iron on hand September 1, 1901, tons..... | 4,373 |
| Value of same..... | \$58,449 |
| Pig iron made September, 1901, to March, 1902, tons..... | 13,880 |
| Value at \$12.70..... | \$176,184 |
| Total value pig iron..... | \$234,633 |
| Sales of pig iron, tons..... | 18,068 |
| Value at \$13.40..... | \$242,224 |
| Pig iron on hand, tons..... | 185 |
| Value..... | \$2,405 |
| Total returns..... | \$244,629 |
| Profit..... | \$9,996 |

It was decided to appoint Timothy Hopkins, John Reed and William M. Deen a committee with power to consummate a sale of the property of the company without securing ratification, provided that the terms of the sale should be approved by the committee unanimously.

It is said the earnings of the Crucible Steel Company of America, of Pittsburgh, for the year will aggregate about \$5,000,000. After deducting interest on the preferred stock and charging off a considerable sum for depreciation, there will remain about 8 per cent. of the common stock. However, no dividends have ever been paid on the common stock of this concern.

Dividends.—The E. W. Bliss Company have declared the regular quarterly dividends of 2 per cent. on their preferred stock and 2 $\frac{1}{2}$ per cent. on their common stock, payable April 1. Books close March 27 and reopen April 1.

The Washburn Wire Company have declared a divi-

dend of 1 $\frac{3}{4}$ per cent. on their preferred stock, payable April 1.

The American Locomotive Company have declared a regular dividend of 1 $\frac{3}{4}$ per cent. on the preferred stock, payable April 21.

The directors of the Dominion Iron & Steel Company have declared a regular semiannual dividend of 3 $\frac{1}{2}$ per cent. on the preferred stock, payable April 7.

OBITUARY.

AARON FRENCH.

Aaron French, president of the A. French Spring Company of Pittsburgh, and also prominently connected with the recently organized Spiral Spring Company of America, died at his residence in the East End, Pittsburgh, on Sunday, April 23. His death came after about a month's illness, the result of a stroke of paralysis at Atlanta, Ga.

Aaron French was one of the oldest men actively engaged in the manufacturing business in Pittsburgh. He was born at Wadsworth, Medina County, Ohio, on March 23, 1823. Aaron French's school education ceased when he was 12 years old, at which time he began work on a farm. When he was 13 he learned blacksmithing, a few years later going to Cleveland to work for the Ohio Stage Company. Later he left blacksmithing and was employed as Western agent by the American Fur Company. About 40 years ago he went to Pittsburgh, and it was then that the A. French Spring Company sprung into existence. Mr. French took hold of the Hazen patent spring. It was Aaron French who made the first of the steel springs now used by every railroad, and at the time of his death Mr. French was at the head of the largest steel spring manufacturing industry of its kind in the world. He was also connected with other enterprises, among them being several gold mining companies in the South.

PHILIP J. BENDER, for 35 years head of the firm of Philip J. Bender & Sons, manufacturers of dies and general machinery at 87 Frankfort street, New York, died from apoplexy on March 22 at his home in Brooklyn, aged 74 years. Mr. Bender was a native of Germany.

Engineering and Other Specialties.—This is the title of a new catalogue which has just been issued by the Eastwood Wire Mfg. Company of Belleville, N. J. It is a volume of 142 pages, 7 x 3 $\frac{3}{4}$ inches. The book is one of the brightest and most complete of its kind that has come to our notice. Besides presenting the well-known line of Eastwood specialties in an interesting manner, it gives considerable engineering data and general information of value to users of steam specialties. A good feature of the book is a map showing the country immediately surrounding New York and indicating the most accessible routes to the Eastwood plant at Belleville.

Bolt and Nut Machinery.—Haberle & Graham, South Bend, Ind., have issued a neat catalogue descriptive of the bolt threading, bolt cutting and nut tapping machinery which they manufacture. Illustrations are given of the Becher screw cutting die head, which is used in their Becher machines, which are made in several sizes, small and double, with case dies or without, to open by hand or automatically. The Becher machine is offered as a rapid bolt threading machine, easily operated, and in many cases taking the place of solid die machines where accurate work is absolutely essential.

The Westinghouse Electric & Mfg. Company will send a large number of mechanics from their works in East Pittsburgh to the new shops of the British Westinghouse Electric Company, at Birmingham, England.

B. M. Jones & Co., representatives in the United States of Samuel Osborn & Co., Sheffield, England, and Taylor Brothers & Co., Leeds, England, announce the removal of their Boston offices to 159 Devonshire street, Rooms 51, 53 and 55.

The older of the two Warwick furnaces at Pottstown, Pa., has blown out for repairs.

The Philadelphia Machinery Market.

PHILADELPHIA, March 24, 1902.

Practically no change is to be noted in the condition of the Philadelphia machinery market when compared with that of last month. The same atmosphere of prosperity which has been in evidence during the past several months pervades all branches of the trade. Manufacturers generally are well pleased with existing conditions, all the shops are busy working to their utmost capacity, and in many cases on overtime, so that a maximum amount of work may be turned out. Indications for a period of continued activity are favorable, and from the condition of the order books it is evident that in many cases the entire year's production of many concerns is practically under contract. With some manufacturers the past month's business has exceeded that of February, which was considered the best all around month that has been experienced in the machinery trade for a long period. There has been no accumulation of stocks of machinery of any kind worth mentioning, and while such conditions exist activity of the machinery trade is assured.

Inquiries are being received in a very satisfactory manner and are reported as being of a nature that lead up to business readily. The various railway companies are likely to be good buyers and some good specifications are on the market at the present time from those sources. A considerable amount of machinery for equipment and replacement in some of the large manufacturing plants is also among the prospective business.

There has been practically no change in the foreign demand. Export trade in some lines continues to be transacted in fair volume, and those engaging in that branch of the trade express themselves as well satisfied under existing conditions. There are no indications, however, of any general resumption of the export trade, such as was experienced a few years ago.

Deliveries have not materially improved, many manufacturers of machinery and tools can accept orders only for long time delivery, being governed not only by the large amount of work they already have in hand, but also by the inability to get raw materials promptly. In some lines, however, it is possible to get fairly prompt shipments; particularly in standard tools of the medium and smaller sizes; but on special and heavy tools manufacturers are accepting orders only for extended delivery, and in some cases are unwilling to make any specified date for same.

Continued activity is to be noted in the various branches of the foundry trade. The different steel casting plants are having their capacities taxed and are being pushed hard for deliveries as specified. In the gray iron foundries a somewhat peculiar condition exists. They are all very busy and prompt deliveries are few and far between, although in some cases they might be had if there had been the usual supplies of raw material. This condition will probably continue until the pig iron situation becomes cleared; whether much relief can be expected until after the first half of the year is uncertain, but it is hoped that the conditions will be materially improved by that time.

All classes of heavy machinery, special tools, traveling cranes, &c., continue to be in active demand and the market in these lines is particularly firm. Inquiries and orders for the various standard tools are reported to have been of a satisfactory nature and in volume ahead of last month, while the manufacturers and dealers in the smaller machine tools, engines, boilers and machine shop supplies advise us that this month has been a most satisfactory one in their lines.

Prices generally are unchanged but of a firmer tone, no particular advances are noticeable, but the tendency to undersell on some lines is not as apparent.

The Philadelphia Machine Tool Company have delivered two 200-ton vertical four-column hydraulic presses to local parties, and have shipped for Western Pennsylvania delivery a large triple high pressure motor driven hydraulic pump for independent feed for hydraulic bulldozer. Inquiries are said to be good and a satisfactory number of orders are being placed on the books, particularly in the line of testing machines and special presses and shears.

Thomas H. Dallett & Co. have had a busy month. Inquiries have been numerous and a good quantity of business has been placed on the books, particularly in the lines of electric and rope driven portable drills, several of each having also been delivered to both Eastern and Western machine shops during the past month.

W. E. Shipley, metal working machinery, advises us that the past month's business has been above the average, and that conditions for future business are quite satisfactory. Inquiries are good and lead up to contracts readily. The demand appears to cover the general line of metal working tools and shipments for Philadelphia and adjacent points have been numerous.

The Franklin Machine Works, Incorporated, are busy in all departments of their plant. Inquiries are reported to be of a very satisfactory nature and the order books in excellent shape, orders for their line of horizontal floor boring, milling and drilling machines and for special tools being the most numerous. Among recent shipments may be mentioned: One No. 1 steel foundry saw, capable of using a 48-inch saw and weighing 16,000 pounds, has been shipped to Jones & Laughlins, Limited, Pittsburgh. A No. 2 steel foundry saw (new pattern) has been delivered to the Solid Steel Casting Company, Chester, Pa. One of their tool room boring machines has been shipped to the National Sewing Machine Company, Belvidere, Ill., and one of the same type has been delivered to the Pratt & Whitney Company.

The American Pulley Company advise us that trade conditions are excellent. Inquiries, both foreign and domestic, have increased, and the resultant business is good; recent orders for export have been received from England, Yucatan, Australia, New Zealand and Mexico, and shipments of large lots have been made to England and Mexico. Domestic trade has materially increased, and besides local and nearby deliveries shipments in car-load lots have been made for Portland, Ore., and other Western points.

Continued activity is to be noted at the plant of Alfred Box & Co., manufacturers of cranes, hoists, &c. A large amount of work is in course of construction and conditions for future trade considered favorable. Among recent deliveries may be mentioned: One 4-ton, three-motor electric crane; one 45-ton five-motor double trolley electric traveling crane and a 75-ton electric turn table, for the General Electric Company, foreign department, for export to Japan. One 15-ton hand power traveling crane for the Equitable Gas & Electric Company, Utica, N. Y.; a 20-ton hand power traveler was installed in the Tompkins sub-station of the Brooklyn Heights Railroad Company, Brooklyn, N. Y.; three three-motor electric traveling cranes have been shipped for equipping the new buildings of the General Electric Company, Lynn, Mass., Works, and one two-motor crane has been furnished for the Schenectady shops of the same company. The installation of a 50-ton hand power traveling crane with motor on the bridge has also been completed for the power station of the Aurora, Elgin & Chicago Railway, at Batavia, Ill.

Link-Belt Engineering Company will, in order to improve their facilities for making plans, estimating, &c., increase their drawing room by an addition 90 x 40 feet, for which the contract has already been let. Inquiries are said to be in good volume and all departments of the plant operating to their full capacity.

Dienelt & Eisenhardt are busy in all departments of their plant, inquiries have been numerous and a very satisfactory amount of new business has been placed on their order books, particularly in the line of dead stroke hammers and of hydraulic jacks. Recent deliveries include shipment of oil cloth printing machinery for export to Scotland and numerous domestic deliveries of hammers and jacks have been made to various parties.

The Philadelphia Roll & Machine Company have in course of construction several large intensifiers and accumulators for the new plant of Charles T. Shoen Company, near Pittsburgh, Pa. Roll lathes are also being made for the Lake Superior Power Company, Sault Ste. Marie, Ontario, while a number of rolls have been shipped to the Bethlehem Steel Company, Bethlehem, Pa.; Maryland Steel Company, Sparrows Point, Md.; Jno. Wood & Bro., Conshohocken, Pa., and the Pennsylvania

Steel Company, Steelton, Pa. Business conditions are reported by them to be in excellent condition with favorable indications for future trade.

The Southwark Foundry & Machine Company continue uniformly busy in all departments. Inquiries have been quite satisfactory, a large amount of work is on hand and the prospective conditions for continued activity considered favorable. Orders for Weiss condensers are said to be numerous and several of large size are in course of construction.

The Tabor Mfg. Company, manufacturers of molding machines, advise that they have more work on hand than at any previous time and all departments of their plant are being operated to the full capacity. Inquiries are reported to be numerous, and some very satisfactory orders have been received, several of which have been for export. They are about to finish 23 more Tabor molding machines of different types for the General Electric Company, at Schenectady, N. Y., which will make 91 of their machines in operation in this one plant. Shipments have been made for export to England and to numerous domestic parties.

The Energy Elevator Company report a very satisfactory condition of trade. Inquiries are being received in good quantity, and a large number of orders have been taken. Recent deliveries include shipments of heavy freight elevators to Carthage, Texas, and Park City, Utah, parties. A large power freight lift has been erected for the Susquehanna Woolen Mills, New Cumberland, Pa., and wagon lifts installed at Tarrytown, N. Y., and Laurel, Del. The local trade is reported to be in most excellent shape.

The Eynon-Evans Mfg. Company continue busy in all departments. Some new equipment for both the foundry and machine shops has been installed which materially aids their facilities. Inquiries are numerous and the prospective business of a satisfactory nature. Among recent orders may be mentioned one for a 10-inch condenser for a new manufacturing plant at New London, Conn. Colgate & Co., Jersey City, N. J., have also placed an order for a second condenser, one having been recently shipped to them. A contract has also been taken to remodel and increase the condensing plant of the Maryland Steel Company, Sparrow's Point, Md. The pattern department is very busy on a large amount of work for the Wm. Cramp Ship & Engine Building Company, the Midvale Steel Company, Baldwin Locomotive Works, the Logan Mfg. Company, Phoenixville, Pa., and other concerns. A large order for Eynon-Korting compound injectors, with special connections, has also been received, while inquiries for blowers are numerous and some large business is in sight.

The J. M. Mast Mfg. Company, Lancaster, Pa., manufacturers of animal traps, &c., have made application for incorporation, and will in the near future remove their plant to Lititz, Pa., where a new factory will be erected. The buildings will be of brick, two stories high, the main factory being 100 x 40 feet; the engine and boiler house will be separate from the factory. Considerable new machinery of various types is to be installed in the new factory.

Thomas F. Conard reports trade to be in active condition. There has been a good demand for boilers and sales of a number of 150 horse-power return tubular and portable boilers have been made. Several negotiations for light locomotives for contractors and switching purposes are pending, and a number of pumps have been sold to parties in the mining district. Indications for promising business conditions during the balance of the year are considered very favorable.

Continued activity is to be noted at the plant of the Baldwin Locomotive Works, where every department is being operated to its very best capacity. The machinery equipment of their new cylinder finishing shop has been completed and the department is now producing at about its maximum capacity. Inquiries for locomotives are reported to be numerous, and a very large amount of work has been placed on their books.

Shipments of engines on two orders from the Pennsylvania Company, one for 50 and another for ten consolidation engines, have begun, and it is expected that they will be delivered at the rate of eight a week. Deliveries

have also begun on the order of the Erie Railroad. Twelve ten-wheel freight engines are about to be shipped by the way of New York and steamer to the Government Railway of West Australia. Numerous shipments to other domestic railroads and to individual companies are also being made.

The Royersford Foundry & Machine Company, Royersford, Pa., advise us that their plant is running full time and with a full complement of hands, and that indications are bright for an exceedingly prosperous year. Among recent shipments may be included one No. 1 and one No. 3 punch and shears to the Prentiss Tool & Supply Company, New York; one No. 3 combined punch & shear to the F. R. Patch Mfg. Company, Rutland, Vt.; one No. 3 single end shear to the Westmoreland Steel & Mfg. Company, Huff, Pa.; one No. 1 combined punch and shear, being the third ordered, was delivered to the Anthracite Separator Company, Hazleton, Pa., and a No. 3 punch and shear was shipped to the H. Champion Company, Chicago, Ill.

Activity continues at the various local and nearby shipyards, and all are operating their plants to the full capacity. The Neafie & Levy Ship & Engine Building Company on the 22d inst., launched successfully the remaining torpedo boat destroyer of the three which they have been building for the Government, the "Barry," which was launched at a higher percentage of completion than any of the others. Steam under full pressure was on the boilers, and after taking the water she returned to the dock under her own power. The "Barry" is 245 feet long with a beam of 23 feet, a displacement on trial of 420 tons and an indicated horse-power of 8000. The boat will carry five 6-pounders, two 12-pounders and one 12-pounder in each of her conning towers, as well as two torpedo tubes, one fore and one aft.

H. B. Underwood & Co., general machinists, consisting of H. B. Underwood and D. W. Pedrick, were, owing to the death of the former, dissolved on March 1, 1902. D. W. Pedrick, having secured the interest held by the late Mr. Underwood, has associated with him Morris G. Condon, former manager of the business, and A. D. Pedrick will continue the business at 1025 Hamilton street under the name of the old firm, H. B. Underwood & Co.

The New York Machinery Market.

NEW YORK, March 26, 1902.

Activity continues at a good and steady pace. There is no especial rush about it, nor is any falling off perceptible. Some good contracts were placed during the week, and inquiry was as good as it has been for some time past. In every branch of the trade merchants are quite satisfied with everything but transportation services. A discordant note that has been sounding for several months has grown to a veritable howl during the last two or three weeks. Since the floods of a month ago the railroad service has been very poor. At the time of the floods the situation was borne rather philosophically, but since shipments have become three or four weeks overdue and the railroad companies give little satisfaction to the shippers, they have given vent to their perturbed state of mind. A prominent Liberty street machine tool maker has had a particularly urgent shipment en route from New Hampshire to New York for just 29 days. This is about the worst case we have heard of. A number of shipments to the West are, however, a month overdue.

While there have been numerous rumors of advancing prices, there have been no changes of consequence since the advance in milling machines, as noted several weeks ago. Concerns dependent upon outside foundries for their castings may soon increase their prices, as their prices on castings have been advanced. Milling machines are about the scarcest of machine tools at present. Quickest deliveries on almost all sizes are months off.

The General Electric Company were the best customers in the street during the week. They shopped about with a list of miscellaneous tools amounting to something like \$50,000. The orders were pretty evenly distributed among the prominent houses.

There was a general finishing up of some of the rail-

road deals that have been under way for some time. The balance of the purchases for the Readville shops of the New York, New Haven & Hartford road were made. There were also some pretty fair orders distributed by the Baltimore & Ohio.

The bulk of the contracts in connection with the Springfield Armory matter have been awarded. More than 50 per cent. of the machinery, aggregating some \$75,000, will be furnished by the constituent concerns of the Niles-Bement-Pond Company. Of this lot the principal portion will be of Pratt & Whitney make. The heaviest item of the entire list is included in this lot. It calls for 124 Lincoln milling machines. They will be of Pratt & Whitney build. A portion of the work went to Manning, Maxwell & Moore, and it is said that Hill, Clarke & Co. of Boston obtained a fair sized slice.

Bertram D. Perkins, treasurer of the Perkins Machine Company of Boston, advises us that: "The Perkins Machine Company of Boston, Mass., sold out to the Perkins Machine Company of Maine, and the directors of the new company will be Col. A. A. Pope (the pioneer in the manufacture of American bicycles); E. A. Pope, formerly treasurer of the Pope Mfg. Company; Bertram D. Perkins, treasurer of the old Perkins Machine company; Fred Perkins and Charles A. Perkins. It will be a close corporation, and no stock will be placed on the market. The factory is to be enlarged by two more buildings, 100 feet and 110 feet long. They are to have also a foundry, which will contain the latest and best tools for the quick handling of work and testing department. Several cranes will be used in each factory, and all the automatic machines will be used in order to turn out the large number of orders quickly. The old company have operated their plant day and night for four years. The new company were formed in order to better care for their customers. The new company have already placed in several new tools, such as Becker-Brainard milling machines, Lucas boring tool, Davis lathes, key seater of new design, chucking lathes, &c. The plant will be run by a Slater automatic engine, which has already been installed. Different agencies will furnish all of our tools for the new works, as we believe in helping the dealers that have been the cause of building up our business. The line of machinery that will be built by the new company will be the same as the old—i. e., power presses and dies for sheet metal work and tin can work a specialty, including all styles and over 200 stock patterns, snagging shapers of heavy design, and the friction shaper that was put on the market in 1900, and a new one running with one belt only. This tool will be on the market very shortly."

No arrangements have been made as yet for the rebuilding of the Forty-eighth street, New York, plant of Hardman, Peck & Co., piano builders, which was destroyed by fire last week. Almost all of the machinery in the plant was completely destroyed.

The Hilles & Jones Company of Wilmington, Del., advise us that they will build a two-story brick pattern shop, 60 x 125 feet. The present pattern shop will be converted into a fitting shop. The machinery in the new shop will be electrically operated. Equipment has been secured.

In connection with the purchases which are being made by the De Laval Steam Turbine Company of Trenton, N. J., and 74 Cortlandt street, as noted in the last issue of *The Iron Age*, a large order was placed for Putnam lathes.

The Modern Laundry Machinery Company, recently organized, Rochester, N. Y., are in the market for one or two radial drills, gear cutter and grinding machine, besides a full line of wood working machinery. It is probable that a considerable amount of other tools and machinery will be required. The company have taken over the business of W. R. Gregory, machinist, and have purchased 2½ acres of ground on Ames street, upon which they are erecting a one-story brick building, 60 x 257 feet, with detached power house. Part of this is to be used for a light wood working establishment, the main machine shop being 200 feet in depth, with a fire wall between the two. A 75 horse-power tubular boiler, made by the Union Iron Works, and a 10 x 30 Hamilton-

Corliss engine, are being installed. E. S. Underhill is treasurer.

Complete machine shop and foundry equipment is required by the Noble & Johnson Machine Company of Hoosick Falls, N. Y., manufacturers of paper mill machinery and engines. They advise us that their plant was so recently destroyed by fire that they have not had time to complete plans for rebuilding. They will probably build a machine shop and foundry, 50 x 100 feet each, which will be equipped with traveling cranes and modern machinery. A carpenter shop will also be built.

We are informed by the Cincinnati Screw & Tap Company of Cincinnati, Ohio, that they are in the market for a number of screw slotting machines, and would be pleased to receive catalogues, prices, &c., pertaining to this class of machinery. J. A. Knecht has charge of the matter for the company.

A 2000 horse-power electric plant will be installed by the Buffalo, Springville & Cattaraugus Railway Company of Buffalo, N. Y. O. L. Upson is the vice-president and general manager of the plant.

Westinghouse, Church, Kerr & Co., who are equipping the new Third avenue (New York) electric power station, will be ready within two or three weeks to purchase the necessary accessories. This company have also been retained to do the engineering in connection with the building of shops, &c., on the line of the Pittsburgh & Lake Erie Railroad of McKees Rocks, Pa. They have just completed the terminal station for this road.

The boiler order in connection with the new plant of the Birmingham Railway, Light & Power Company of Birmingham, Ala., was awarded to the Babcock & Wilcox Company. The order calls for six 400 horse-power water tube boilers.

The Washington Company of 39-41 Cortlandt street have been awarded an order for two 250 horse-power Franklin water tube boilers from the United Coke & Gas Company of Camden, N. J. They also received heavy orders for Franklin boilers from the Sterling White Lead Company of Pittsburgh and the Alabama Consolidated Coal & Iron Company of Birmingham, Ala.

The entire pumping equipment for which the Mexican National Railroad has been in the market for some time has been awarded to H. E. Maxfield, New York representative of the Lawrence Machine Company of 39-41 Cortlandt street. The order includes three complete installations of centrifugal pumps direct connected to vertical engines, each having a capacity of 6,000,000 gallons per day. The appurtenances are also included.

The Philadelphia & Lehigh Valley Traction Company of Allentown, Pa., have placed an order with Charles H. Paine, 85 Liberty street, New York, for 4000 horse-power of Wainwright even flow feed water heaters, to be built by the Taunton Locomotive Mfg. Company of Taunton, Mass. They will be installed in the company's new plant at Allentown, Pa.

Col. W. H. Dowe, 7 Wall street, New York City, is negotiating for the equipment for the large electrical plant which he and others contemplate building at Shoshone Falls, near Boise City, Idaho, the site for which is now being prepared. The plant will cost \$750,000 and power will be distributed from 150 to 175 miles. Frank W. Stone of San Francisco, Cal., is interested.

The Farist Steel Company, Bridgeport, Conn., have made arrangements to rebuild their car spring plant, recently destroyed by fire, and expect to commence making springs in ten weeks. There were no boilers in the building and the damage to the engine is to be repaired. Most of the machinery required is made from their own patterns and from castings made in Bridgeport, so that practically no new equipment will be needed for that department. They advise us, however, that they will make some purchases of special machinery for their machine shop as soon as they know exactly what will be required.

A quantity of equipment, including engines, boilers, machinery, &c., will be required by the International Correspondence Schools of Scranton, Pa., for their new printing building, contract for the erection of which

has just been awarded. It will be 167 x 460 feet, part five, four and three stories, and will cost \$400,000. Plunger elevators will be installed and each machine will be run by a separate motor. It is possible that a power plant will also be erected.

The Sauquoit Silk Mfg. Company have recently placed an order with the Buffalo Forge Company of Buffalo, N. Y., for eight of their high speed automatic engines, which will be used in their works at Scranton, Pa., Philadelphia, Pa., and Bethlehem, Pa., four at the first and two at each of the latter plants. These will be of the inclosed type, running in oil, which thus presents no difficulties in the way of damage to goods by throwing oil on them. The engines will be located at various points throughout the factories and used principally as auxiliaries in the case of break downs to the main engines, so that the separate sections of the mills may be kept running without loss of time. The decreased efficiency of small, high speed engines over a central unit will be made up for in this case by the avoidance of belting.

L. S. Starrett Company and Hill, Clarke & Co. will occupy the large store on the northwest corner of Liberty and Greenwich streets after April 1. This wareroom was for a number of years the New York office of the Pratt & Whitney Company.

Boston Bridge Works have removed their offices from 70 Kilby street to 47 Winter street, Boston, where they occupy an entire floor and have better facilities for the transaction of business. The works of this concern are located at East Cambridge, Mass., where they have recently completed a thoroughly modern plant for structural steel work, bridges, buildings, &c., for which they are engineers and contractors.

The Chicago Pneumatic Tool Company, owing to their requirements for greater office room, which they are unable to procure in the Monadnock Block, their present building, have decided to remove to the Fisher Building May 1. After May 1 they will be located on the tenth floor of the Fisher Building, corner of Dearborn and Van Buren streets, Chicago, where they will occupy very nearly the whole floor. Their New York office will remain, as heretofore, at 95 Liberty street.

The Cleveland Machinery Market.

CLEVELAND, OHIO, March 25, 1902.

The machinery market seems to be pursuing a very even tenor. Dealers report that sales in this section thus far this year have been fully up to the corresponding periods last year, although during the past few days one or two concerns note a falling off in the number of inquiries. In some cases this has been attributed to the recent danger of continued labor troubles, but since the settlement of the threatened difficulties with the molders and core makers this is removed. The core makers were granted a straight increase of 15 cents, with a minimum of \$2.65 per day. The boiler makers' strike is still on, but the manufacturers claim that 75 out of 250 of the strikers have returned to work, and that others are being employed. This strike does not affect the general machinery business as badly as it does marine repairs going on in this city. Of any single class of trade the automobile manufacturers appear to be creating the largest demand for machine tools at present. This industry has reached very large proportions in Cleveland, and is developing at an astonishing rate. The Baker Motor Vehicle Company and the American Automobile & Mfg. Company are moving into new factories of extensive proportions; the White Sewing Machine Company, the Peerless Mfg. Company and the Hoffman Automobile & Mfg. Company are installing new machinery to increase their product; the F. B. Stearns Company and the Krasstin Automobile Company are commencing work on new factories, while the Winton Motor Carriage Company announce that they will shortly commence work on the largest factory of its kind in the country. They have purchased 12 acres of land on the L. S. & M. S. Railway, west of the city, and have completed plans for a plant, which will be unique in many ways. It will be under one roof, and the building will be nearly 900 feet in length.

All machinery will be driven by gasoline engines, the carriages built by the company being of this type. Employment will be given to 1000 men, and between 10 and 15 vehicles per day will be turned out. A large amount of new machinery will be required. The company have increased their capital stock to \$1,000,000.

Manning, Maxwell & Moore have recently secured one of the largest complete shop equipments sold in this section of late. It is for the Buckeye Malleable Iron Company, Columbus, and amounts to something like \$30,000, it is reported.

Strong, Carlisle & Hammond report the volume of business as being very satisfactory, but they say large orders have been few and far between during the past two or three months. They have recently sold a number of tools to the Duplex Printing Press Company, Battle Creek, Mich., and to the Carroll Foundry & Machine Company, Bucyrus, Ohio, several machines. Both of these orders included large Brown & Sharpe gear cutters, the last mentioned concern buying a 60-inch machine. They recently sold a 48 x 48 x 16 Detrick & Harvey planer to the Cochran Company, Lorain.

The Marshall & Hushart Machinery Company's branch report that February and March, thus far, have been fully up to last year's marks, but at the present time there is a surprising lack of inquiries, indicating that the total month may fall behind the same month last year. They have recently sold several tools to the Cochran Company, Lorain, and a Baker Bros.' key seater to the Carroll Foundry & Machine Company, Bucyrus.

George H. Bowler, dealer in second-hand machinery, has just bought up the entire equipment of the Stearns bicycle factory, at Syracuse, and is removing about 100 tools of all kinds to his warehouse in Cleveland. He reports a very heavy demand for small second-hand tools and good call for large tools, but the latter are very difficult to secure. He has recently sold a new 600 horsepower Allis-Corliss blowing engine to C. Baird & Co., Philadelphia.

The American Foundry & Machine Company, who are building a new plant at Ravenna, have established an office at 1415 Williamson Building, Cleveland, and are buying their equipment from here. They have closed contracts for a 15-ton crane from the Browning Engineering Company, Cleveland; a 120 horse-power McEwen engine, direct connected to a 75-kw. C. and C. generator, several large motors for driving machinery and a number of tools. This is simply the preliminary equipment, and they will continue to make purchases from time to time. Work on the new plant is being pushed. It is located in Ravenna, convenient to the Pennsylvania and Erie railway tracks, and will have switches running through portions of the buildings. The machine shop will be 132 x 121 feet, the foundry 122 x 75 feet and supply shop 120 x 15 feet. The foundry will have two cupolas and will have a capacity of 17 tons per hour. The three buildings will be covered by cranes. They will manufacture rock crushers and other mining machinery, and will do a general machine shop and foundry business.

Jurs & Drake, San Francisco, have organized the Reliance Bolt Company and will establish a plant in that city. They have practically closed with the Acme Machinery Company for a complete outfit of nut and bolt machinery and have purchased a number of other tools from local dealers.

The C. O. Bartlett & Snow Company have recently increased their capital for the production of hoisting, conveying, mill and cement machinery, have purchased a large plant at Columbus and French streets, this city, and will move as soon as possible. They are building fueling outfits for the National Dock Fuel Company and for M. A. Hanna & Co., Cleveland; dryers, conveyors and elevating machinery for the Southwestern Portland Cement Company, Kansas City, and drying and pulverizing outfit for the Indianapolis Water Works. The latter are experimenting with a new method of smoke prevention, consisting of pulverizing the fuel, wetting down and then drying. L. K. Davis, 135 Broadway, New York, is the engineer. The local concern are watching the process with much interest, as it may open a broad field.

The Cleveland Machine & Mfg. Company, who recently commenced operations in a new plant, are building a hydraulic hoisting outfit for the Pittsburgh & Conneaut Dock Company, Conneaut, and rolling mill charging machinery for the Inman Steel Company, Chicago. They are also very busy on smaller work.

The Moore pneumatic crane plant of the Chicago Pneumatic Tool Company are just completing an addition which will double the capacity of their crane shop, and in which they are installing a considerable amount of new machinery. Among recent orders they sold a 5-ton pneumatic crane in Northampton, Pa.; a 25-ton pneumatic crane in Roanoke, Va.; 15-ton hand power crane in Muskegon, Mich.; ten 4-ton hand power cranes in St. Louis, three 10-ton jib cranes in Chicago and a 4-ton pneumatic jib crane in Pittsburgh. They report the pneumatic hoist business as very brisk.

The Chisholm & Moore Mfg. Company are now located in a new machine shop and office building, and are just completing an addition to their malleable iron foundry. They are very busy in all their lines.

The Wellman-Seaver Engineering Company, Cleveland, have changed their name to the Wellman-Seaver-Morgan Engineering Company, and enlarged their purpose to include the manufacture of machinery and other iron and steel products. Among other large work they are building a coal elevating and handling outfit for the main power station of the Cleveland Electric Railway Company, which is undergoing extensive alterations and improvements.

The Garry Iron & Steel Company are now engaging more extensively than ever in the production of structural material. They have recently closed contracts for structural work for the Youngstown Steel Castings Company, the Lloyd Booth plant of the United Engine & Foundry Company, Youngstown, and for an addition to the plant of the Cleveland Frog & Crossing Company. They are building a number of immense steel bins for the St. Louis Portland Cement Company, St. Louis, and structural work and machinery for operating dams for the Michigan & Lake Superior Power Company. They are building a portable pneumatic crane for the Atlas works of the Standard Oil Company at Buffalo.

The Snyder-Hughes Company, manufacturers of pumps, have taken a contract for a 3,000,000-gallon pumping engine, to be installed in the Hollenden Hotel, Cleveland, one of the largest pumps ever used for such purpose. They say there is a very large demand for small pumps.

Directors of the Vulcanus Forging Company have decided on extensive improvements and work will start as soon as plans can be completed. A power plant will be installed and they are on the market for a 150 horsepower engine, 150 horse-power boilers and direct connected generator for lighting. They are installing large bolt machines, bulldozers and drop hammers. And they are at work on a number of large orders for telephone pole steps, knuckle pins, eye bolts, car forgings and bolts. W. E. Renner, formerly with the Pressed Steel Forge Company, Ellwood City, Pa., has become superintendent of their forging department.

The Cleveland Punch & Shear Works Company are building the following tools: One 36-inch double punch, Southern Railway Company, Manchester, Va.; one 18-inch punch and shear, Chicago & Northwestern Railway, Chicago; one 16-foot roll, one 36-inch double punch and shear and a horizontal punch for the Wheeling & Lake Erie Railway, and one set 18-foot bending rolls for the Columbus Iron Works, Port Huron, Mich. The demand for heavy tools for railway work was never heavier than at present.

The Marietta Sheet & Tin Plate Mill Company of Marietta, Ohio, have been incorporated with \$200,000 capital stock under the laws of West Virginia. Work has been started on the plant.

The Columbus Bolt Works, Columbus, have commenced on a large warehouse and office building. It will be of slow burning construction, equipped with elevators and lighted by electricity.

The Stark Rolling Mill Company, Canton, are having

plans prepared for a new Bessemer converting plant. Originally plans were drawn for the erection of two 35-ton open hearth furnaces, but it seems probable that the Bessemer plant may take their place.

The Clover Leaf Railway are building a power plant at their shops at Frankfort. It will contain three 100 horse power, high pressure boilers, and will furnish steam for the shops.

The Marion Machine & Tool Company, who will locate at Upper Sandusky, have awarded contracts for erection of foundry and machine shops. Contracts will shortly be awarded for power and shop equipment.

The Canton-Akron Railway Company who have recently absorbed lines in Canton and Massillon, will build an extensive power house at Canton; sufficient to operate all the roads owned by the company. L. E. Meyers & Co., Chicago, are engineers.

The village of Navarre is securing estimates on the cost of an electric lighting plant sufficient to illuminate the village.

The council of Caledonia has a committee securing figures on the cost of a municipal electric lighting plant.

A representative of the Buckeye Engine Works, Salem, states that the recent reported sale of the company's business to Cleveland and New York capitalists has little or no significance, the change being simply the taking out of a charter under the laws of New Jersey and an increase of capital stock, the personnel of the company remaining as heretofore.

The published announcement of the settlement of the machinists' strike at the Morgan Engineering Works, Alliance, Ohio, was premature. The men failed to return to work March 17, as was anticipated, and since then repeated efforts made by the local Board of Trade to settle the difficulty have failed. President Morgan of the company is reported to have announced that he will receive no more union committees, and it is believed no further hopes of a settlement can be expected. The men employed in the electrical department have also joined the machinists, as they refused to work with nonunion men. The plant is under the protection of special police.

Information Wanted.—A correspondent wishes to know who manufactures machinery for making steel pins for talking machines (phonographs, &c.).

A correspondent desires the address of manufacturers equipped to make steel wind mills with galvanized fans.

Edward Atkinson, president of the Boston Manufacturers' Mutual Fire Insurance Company, suggests that one or two large or jumbo sprinkler heads be put near the foot of the elevator or belt shafts, in such position as to throw a heavy volume of water directly upon the chief motors and at points where grease may be scattered so as to become dangerous. The bearings of every large high speed fan should be guarded by sprinkler heads in the same way, as they are very liable to become heated. The expense of this safeguard will be very slight. The large sprinkler heads can be supplied by the General Fire Extinguisher Company, by the Walworth Mfg. Company or by the Estey Sprinkler Company.

The report that the Pittsburgh Reduction Company of Pittsburgh, manufacturers of aluminum, are planning to build a plant in East St. Louis, Mo., for the manufacture of aluminum wire is untrue. This concern have no such plans under way at this time.

The report that the American Steel Hoop Company would build three new finishing mills at Youngstown, Ohio, is untrue.

The National Steel Company are making extensive improvements at their New Castle Works at New Castle, Pa. Two new converters of 10 tons capacity each are being installed, a new bottom oven building is being erected and the machinery and appliances generally are being overhauled. The plant is expected to start again about April 1. John Reis is general superintendent.

HARDWARE.

IT is needless to enforce upon the attention of the great manufacturing and commercial interests of the country the obligation, looked at from the viewpoint of opportunity in the trade, of constant extension and growth. The spirit of enterprise which recognizes the duty of enlarging the business from year to year, so as to give it a steady increase and development in the volume if not in the variety of its products, is characteristic in an eminent degree of the American manufacturer of Hardware. In connection with unceasing study of improvement of the product and the lowering of its cost, there is the looking after new channels of distribution and the occupation of new markets. The representative manufacturer expects to be making additions to his plant as well as improvements in his manufacturing methods. He is dissatisfied if he has not made progress so as to secure for his goods a larger and more prominent place in the trade than they occupied a year ago. This aggressiveness and persistence of enterprise is in large measure the secret of the extraordinary development of manufacturing interests which has given to this country a commanding position among the nations.

A similar spirit animates the jobbing trade. There has been for years, and never more marked than at present, a desire on the part of the wholesale houses to increase their business and occupy as fully as possible the territory which lies within their reach. There has therefore been a persistent canvassing for business by means of an army of traveling salesmen, who are many of them admirably equipped for effective work in the securing of orders. There has been a close and careful cultivation of the field, care being taken not to overlook any opportunities for business. In doing this there has, indeed, been not infrequently the selling to consumers and to others who might with advantage and propriety have been looked after by the local merchants. There has been, too, a constant adding to the assortment of goods carried in stock by the jobbers, so that they are in a position to offer a much wider and more diversified line than was the case a few years ago. At the same time they have gradually enlarged their views as to the field which it behooves them to cultivate until at the present time many leading houses attempt to cover a large part of the country, and some are endeavoring to extend their business from the Atlantic to the Pacific and to have dealings even with foreign lands. That this desire for growth and expansion on the part of the jobbing trade has been in some ways carried to excess, so that it becomes a cause of recognized evils in the trade at large, is unquestionable. At the same time it is the explanation of the large place occupied by jobbing interests, and the splendid ability and success which have characterized the management of so many leading houses.

Among the retail merchants there is, obviously on a smaller scale and in a more limited field, an opportunity for the successful application of the same principles. Illustrations, too, among this class of houses of constant and steady growth are to be found on every hand. Many instances will occur to our readers in which a small business has developed into a great business. Not a few of the prominent jobbing houses are, in fact, the outgrowth of retail concerns, who by a gradual enlargement of their interests have attained to their present position. A multitude of other houses are little by little making for themselves a better standing in their community and se-

curing gradually but steadily an increasing trade. With the retail merchant, however, as a class the duty of growth and expansion is not as fully or as generally recognized as it should be. There is not nearly the same amount of enterprise as is shown by the manufacturer and jobber. There is too much of a disposition to let things run along in the established order without an effort to increase the business, which is one of the characteristics of the alert and up to date merchant. As a consequence, there has been in many Hardware stores little progress, and in not a few actual retrogression. Some of this may be accounted for by the stress of adverse circumstances. In most cases, however, an aggressive spirit and more enterprise and push would have produced different results. There would in that case have been less complaint of the evils which are now plaguing the trade, and there would have been more satisfaction and pleasure in business and the enjoyment of a larger prosperity. The great need in the retail trade is for the retail merchant to have the spirit of enterprise and an intelligent improvement of his opportunities under the stimulus and encouragement of the example set him by the jobber and the manufacturer.

There is throughout the trade a disposition to recognize the wisdom of conservatism in the matter of prices, and what some of the great interests in the raw material market are credited with doing in the way of restraining abnormal advances meets with hearty approval. The many manufacturers who have refrained from advancing goods under the pressure of the large demand or in view of their control of the market are regarded by merchants generally as pursuing a course which in the long run will be found to promote their interests as well as the welfare of the trade as a whole. Some of the advances made in the prices of finished goods are recognized as necessary on account of the iron market. The recent advance in Shovels and Spades, however, is regarded by many conservative merchants as of questionable wisdom. The trade certainly have had the impression that the prices previously prevailing were sufficiently high.

Condition of Trade.

The coming of decided spring weather has had the effect of stimulating business, as merchants are entering upon more active and definite preparations for the season's business. Reports from travelers are almost uniformly of a cheerful tenor, and their order sheets cover a variety of goods in entirely satisfactory quantities. Prices are firm, with something more of an upward tendency than is regarded as entirely healthful by many in the trade. On account of the condition of the Iron market advances in some of the finished products, especially those into which Iron enters largely, have been found necessary, and the announcement of higher prices in such goods is a feature of the situation. Many of the manufacturers are unable to turn out goods as promptly as their customers desire, a fact which not only reflects the large volume of business, but is explained as caused by the difficulty of obtaining raw material, the factories being thus prevented from running to their full capacity. The amount of current business which is coming in to the manufacturers is undoubtedly diminished somewhat by the fact that the larger buyers have already covered their wants, and are not yet under the necessity of replenishing stock. Backwardness of the season in many parts of the country has also operated somewhat to repress trade. Notwithstanding these influences jobbers

report an excellent demand and there is little reason for complaint. The business of the country is evidently going at the great pace which has kept up for some time, and the indications point to a very large and prosperous season's business.

Chicago.

(By Telegraph.)

Business is now coming in with a rush. Spring appears to be opening considerably earlier than usual, and from all parts of the West orders are coming in very freely. The orders now being received are running larger than usual, showing that dealers are freely stocking up to meet the heavy requirements of their trade. It is not a rare matter for an order to be received calling for a full carload of mixed Hardware. Quite a number of new stocks have been purchased during the week. It is expected that the next few weeks will see all records broken for the volume of business in Hardware in this locality. The advances which have been made on quite a number of articles have exerted an additional influence in causing increased trade. The excellent demand is shared by both the Shelf and Heavy Hardware trade. Jobbers of Heavy Hardware are still experiencing a demand in excess of anything previously known.

St. Louis.

(By Telegraph.)

The very favorable spring conditions prevailing generally are a strong incentive to merchants to stock up, and reports indicate a very heavy demand in all seasonable lines of Hardware. The jobbers sum up present conditions as being most satisfactory and promising well for the future. Shelf Hardware is in very large call from all quarters. The jobbers in the heavy department of the market are handling a large volume of business.

San Francisco.

PACIFIC HARDWARE & STEEL COMPANY.—The California State Retail Hardware Association had a very successful meeting in San Francisco during the last week. Among other things, the San Francisco Jobbers' Association met them cordially, and arrangements were made by which the good feeling and brotherly love between the two associations were cemented more firmly.

The retail association is progressive and doing a great deal of good, and nearly all the Hardware dealers in California are joining their ranks.

The demand for all kinds of Hardware is good, particularly building material, and owing to the universal call for same there is quite a shortage in this market.

The weather for February was all that could be desired in the way of rain, and the farmers are feeling jubilant at the prospect of good crops, and dealers likewise are anticipating a good business.

NOTES ON PRICES.

Wire Nails.—The difficulty of getting prompt shipments of Wire Nails from mill continues. Manufacturers were behind their orders before the late floods, and the two weeks which were lost as a consequence of this interruption have been very much felt. Many orders were placed at mill during January for shipment in March and April, and some of the Nails on these orders have not yet been received by the purchasers. The scarcity of cars and locomotives is another feature of the situation. Jobbers complain that almost every shipment received by them is short some sizes. From present indications there appears to be little hope of improvement in the situation for the next thirty days at least. A meeting of the outside Wire Nail manufacturers is scheduled for March 27. Quotations are as follows: f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|--------|
| To jobbers in carload lots..... | \$2.05 |
| To jobbers in less than carload lots..... | 2.10 |
| To retailers in carload lots..... | 2.10 |
| To retailers in less than carload lots..... | 2.20 |

These differentials are not always observed by outside mills.

New York.—With better weather the local demand for Wire Nails shows improvement. Most of the jobbers' stocks are broken in assortment, owing to the difficulty in getting Nails from mill promptly. The market is firm, and is represented by the following quotations: Small lots from store, \$2.25 to \$2.30; carloads on dock, \$2.18 to \$2.20.

Chicago, by Telegraph.—The largest manufacturers report the tonnage of Wire Nails now entered on their books in excess of anything in their experience. They are confronted with the possibility of being unable to secure sufficient material to enable them to keep their factories in operation to full capacity. The early opening of spring has precipitated a very heavy demand for prompt shipment. Jobbers likewise report a heavy trade with some difficulty in satisfying the pressing demands from their customers. Prices are unchanged at \$2.20 for single carload lots and \$2.25 to \$2.30 for small lots.

St. Louis, by Telegraph.—The demand for Wire Nails is of large proportions and prices are on a firm basis. Small lots from store are quoted at \$2.30.

Pittsburgh.—The Wire Nail mills will meet in Chicago, on Thursday, March 27, and an advance of about \$1 a ton in prices would not surprise the trade. Raw material is steadily advancing and, based on Billets and Rods, the present price of Wire Nails is regarded as low. Demand for Wire Nails is heavy, and most of the mills are behind in orders on account of car and Steel shortage. We quote Wire Nails at \$2.05 in carloads and \$2.10 in small lots, f.o.b. maker's mill.

Cut Nails.—There is a fair demand for Cut Nails, while difficulty is experienced in getting prompt shipments. Quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

| | |
|-----------------------------|--------|
| Carload lots..... | \$2.00 |
| Less than carload lots..... | 2.05 |

New York.—Orders for Cut Nails, in the local market, are about in the usual proportion to Wire Nails. New York quotations for carloads and less than carload lots are as follows:

| | |
|-------------------------------------|--------|
| Carload lots on dock..... | \$2.13 |
| Less than carload lots on dock..... | 2.18 |
| Small lots from store..... | 2.25 |

Chicago, by Telegraph.—The demand for Cut Nails is improving, but small lots from stock are unchanged at \$2.20.

St. Louis, by Telegraph.—Cut Nails are in fair demand, and \$2.30 is the quotation for small lots from store.

Pittsburgh.—There is a good deal of trouble in getting prompt deliveries of Steel Cut Nails, on account of scarcity and high prices of Billets. Many consumers are using Iron Nails on this account. We quote Cut Nails at \$2, base, in carload lots and \$2.05 in less than carload lots, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination.

Barb Wire.—The volume of business in Barb Wire continues large. Manufacturers are unable to keep up with orders. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Galv. |
|---|----------|--------|
| To jobbers in carload lots..... | \$2.60 | \$2.90 |
| To jobbers in less than carloads..... | 2.65 | 2.95 |
| To retailers in carload lots..... | 2.70 | 3.00 |
| To retailers in less than carloads..... | 2.80 | 3.10 |

Chicago, by Telegraph.—The movement of Barb Wire is exceeding anything experienced in previous years and manufacturers are apprehensive that they will be unable to secure enough material to enable them to keep their factories running to full capacity. This must be done in order to meet the requirements of the trade. Jobbers report a greatly increased demand from dealers and are urging manufacturers to make better shipments. Prices are unchanged at \$2.80 for Painted and \$3.10 for Galvanized in single carload lots, with 5 cents extra for small lots.

St. Louis, by Telegraph.—The demand and inquiry for Barb Wire are reported to be very heavy. Jobbers quote in small lots, \$2.90 for Painted and \$3.20 for Galvanized.

Pittsburgh.—A heavy movement in Barb Wire and

THE PROPOSED CONSOLIDATION OF JOBBERS.

THERE have been many rumors during the week in regard to the proposed consolidation of jobbing interests, and constant conferences, at which many prominent houses were represented, have been held in this city. Reports have been given currency in the daily press that the leading houses in the trade are to be parties to the movement, but it is impossible to ascertain what foundation there is for such rumors, as the houses do not confirm or deny the reports. It is understood that this is a critical time for the project, as options expire April 1, so that if anything is done it must be done without delay. Those active in the matter express the utmost confidence that the effort will be successfully consummated, but in what form it will be no intimation is given.

NEW YORK STATE RETAIL HARDWARE ASSOCIATION.

THE project for the formation of a retail Hardware Association in New York State is progressing satisfactorily, and it begins to look as if the movement would soon take definite form. It seems likely that a meeting of the trade will be called during the latter part of the coming month, probably at some central point like Syracuse. John R. Taylor of Little Falls, N. Y., who is active in promoting the project, under date of the 2d inst., has issued another circular, No. 2, as follows:

Our circular letter to the merchants of this State has met with so much favor that we feel warranted in sending another, showing the objects we hope to accomplish by a united effort and union of interest.

We have received 150 replies to our first issue. Most of the leading houses express a desire to co-operate with their neighbors and have a fair understanding with each other. Many firms have neglected to answer, perhaps thinking that, as they are small firms, their assent or dissent will not cut much of a figure, but we want all. We need your support and your advice. No man can pass a day without learning something that will be a benefit to himself or his neighbor.

We have received letters from gentlemen who claim they are too old to join the association. These are the men we want with us, for their experience and advice. They are the fathers of the association, and we look to them for encouragement and guidance. They should stand at the helm and steer the ship, avoiding the rocks and shoals that the young are apt to encounter.

Then the young merchant is needed, with new ideas, full of life, strength and hope—they would be the workers, the backbone of co-operation. In fact, we need every merchant dealer, both great and small. Give us a helping hand and we will show the world what can be accomplished by unity.

OBJECTS OF THE ASSOCIATION.

1. To ask the manufacturer and the jobber to unite with us for a friendly adjustment of trade differences, on the principle that our interests are mutual.
2. That all merchandise handled by the Hardware trade should be distributed through the local houses, and the profit of the distribution be for the local dealer.
3. That social intercourse and good fellowship shall be made paramount, so that our neighbors and tradesmen may learn to have confidence in the actions of each other.
4. Regulation of freight and express rates to secure a uniform rate of transportation.

The inclosed card explains itself as a further step toward organization.

Following is the card referred to at the close of the above circular:

NEW YORK STATE HARDWARE DEALERS' ASSOCIATION.

GENTLEMEN:

I DESIRE TO BECOME A CHARTER MEMBER OF THE PROPOSED STATE HARDWARE DEALERS' ASSOCIATION, AND WILL, IF POSSIBLE, ATTEND THE MEETING FOR ORGANIZATION WHEN CALLED.

NAME OF FIRM.....

BUSINESS ADDRESS.....

Forward this card to the undersigned, and notice of the place and date of the organization meeting will be given you when decided upon. Signing this does not bind you to membership.

JOHN R. TAYLOR,
LITTLE FALLS, N. Y.

John Kerr has bought the Hardware, Stove and Sporting Goods business of Weiner & Link, Burt, Iowa.

THE HARDWARE AND MANUFACTURERS' CLUB, CHICAGO.

THE organization of the Hardware and Manufacturers' Club of Chicago was completed at a called meeting held in the rooms of the Technical Club, in that city, on the 19th inst. This club has been in process of formation for some considerable time, but, as usual in movements of this kind, the progress made, while steady, was not as rapid as some of those interested would have been pleased to see. Nevertheless, sufficient support was received to warrant the completion of the organization and the adoption of the necessary measures to carry the purposes of the originators of the club into effect. At the above meeting the following officers were elected:

PRESIDENT, W. H. Withington,
President Withington & Cooley Mfg. Company, Jackson, Mich.
FIRST VICE-PRESIDENT, W. H. Bennett,
Chicago manager Reading Hardware Company.
SECOND VICE-PRESIDENT, C. A. Knapp,
President Knapp & Spencer Company, Sioux City, Iowa.
SECRETARY-TREASURER, H. H. Roberts,
Chicago manager The Iron Age.

EXECUTIVE COMMITTEE: D. W. Simpson, chairman, president Wilcox Mfg. Company, Aurora, Ill.; Melville W. Mix, president Dodge Mfg. Company, Mishawaka, Ind.; Geo. W. Trout, Geo. W. Trout & Co., Chicago; H. J. Cassady, manager Automobile & Cycle Parts Company, Thompson Factory, Chicago; J. E. Bromley, president American Cycle Mfg. Company, Chicago.

The following committees were also appointed:

COMMITTEE ON CONSTITUTION AND BY-LAWS: D. B. Gann, chairman, Gann & Peaks, Chicago; Geo. W. Cope, associate editor The Iron Age, Chicago; Sidney P. Johnston, editor American Artisan, Chicago.

COMMITTEE ON ADMISSIONS: J. D. Warren, chairman, president J. D. Warren Mfg. Company, Chicago; W. H. Bennett, Chicago manager Reading Hardware Company; H. H. Roberts, Chicago manager The Iron Age.

The list of officers embraces well known as well as enterprising and progressive men who have the interest of such an organization at heart, and who may be relied upon to put forth their best efforts to make the new organization a success. The club will share the quarters of the Technical Club at 230 Clark street, Chicago, which adjoins the Grand Pacific Hotel.

The first event of importance in the history of the new club occurred on the evening of its formal organization, when a banquet was given in its quarters to the delegates attending the annual meeting of the National Retail Hardware Dealers' Association by W. H. Bennett, D. W. Simpson and J. D. Warren.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

Ed. C. Whitlock has purchased a stock of Hardware at Kinross, Iowa, and will also handle Stoves, Bicycles, Pumps, &c., operating a tin shop for roofing and general repairing. He desires catalogues and price-lists.

Frantz Hardware Company, Enid, O. T., wholesale and retail Hardware, Stove, Buggy and Wagon and Agricultural Implement merchants, expect soon to occupy their new establishment, and express a desire for catalogues of up to date Hardware Store Fixtures. They will also value catalogues, circulars, &c., pertaining to the general Hardware line.

Hinton Hardware Company of Hinton, W. Va., have been incorporated under the laws of the State of West Virginia, with a capital stock of \$25,000 and the following persons as officers: Jas. H. Miller, president, Hinton, W. Va.; J. W. Ruff, vice-president, Bluefield, W. Va.; H. Ewart, treasurer; A. G. Flanagan, secretary, and L. P. Graham, general manager, Hinton, W. Va. They have succeeded Graham Hardware Company, who have been in the Hardware business since 1889. They are doing a wholesale and retail business. The company opened up March 1 in the new building, built by Mr. Graham especially for the Hardware business, occupying two rooms, each 22 x 100 feet, with wareroom adjoining. They report a good trade, and will be pleased to correspond with manufacturers and

their agents for goods usually carried by the jobbing Hardware trade. They purpose to discount all bills purchased by them.

Mueller & Brown have just opened up in Shelf Hardware, Farm Implement, Stove and Paint business in Abilene, Texas, and would be glad to receive catalogues, price-lists, &c., relating thereto. Mr. Brown was formerly in the same line at Munfordville, Ky.

Hardware Organizations.

Southern Hardware Jobbers' Association.

Announcement is made that the twelfth annual convention of the Southern Hardware Jobbers' Association will be held at Atlantic City, N. J., June 17-20 next.

Texas Hardware Jobbers' Association.

The next annual meeting of the Texas Hardware Jobbers' Association will be held in Fort Worth, April 21 and 22. The headquarters will be at the Worth Hotel.

ALBANY HARDWARE & IRON COMPANY'S BANQUET.

THE ALBANY HARDWARE & IRON COMPANY, Albany, N. Y., gave a banquet to the employees and stockholders of the company at Keeler's Hotel, Friday evening, March 21. It is the custom of the officers to give some kind of an entertainment at proper intervals that is of mutual interest to employers and employees. Last summer they arranged a trolley ride to a country inn, with accompanying athletic games, dinner, &c.

Covers were laid for 80 guests, including the officers, directors and stockholders of the company. Among the officers present were: Charles H. Turner, president; James K. Dunscomb, treasurer, and W. B. Wackerhagen, secretary. The rest of the company were employees, except ten stockholders and nine guests.

President Turner acted as toastmaster and a number of speeches were made in which congratulations were offered on the close friendship and great harmony existing between the corporation and their employees.

ANDREW B. HENDRYX COMPANY'S NEW CATALOGUE.

THE ANDREW B. HENDRYX COMPANY, New Haven, Conn., have just issued their illustrated catalogue, which is bound in red leather, gilt edged and divided into three sections, with a separate index for each. The first 175 pages describe a large line of Bird and Animal Cages, Cage Specialties and the following styles of Chain—viz., Curb, Safe, Ladder, Plumbers', Safety and Single and Double Chains made variously of bronze, brass and iron. The next section, pages 1 to 111, treats exclusively of Fishing Tackle Reels, and is separately indexed. The balance of the book, pages 112 to 192, inclusive, relates to Spoon Baits, Fly Spoons and Feather Hooks in great variety.

THE DEMING COMPANY'S NEW CATALOGUES.

THE DEMING COMPANY, Salem, Ohio, have issued illustrated catalogue No. 21 of Pumps and Hydraulic Machinery, Well and Pump Fixtures, including Cistern, Well and Wind Mill Pumps, Iron and Brass Cylinders, Well Supplies, Hydraulic Rams, Spray Pumps and Nozzles, Triplex Power Pumps, Artesian Well Pumping Engines, &c. It is a compact and comprehensive volume of 294 pages, relating to these lines of goods. They also issue separately catalogues relating to Power Pumps and Spray Pumps and Nozzles.

SAMUEL DISSTON, accompanied by Mrs. Disston and their two daughters, left Philadelphia on the 26th inst. for a trip to California and the Pacific Coast. They expect to return in about six or eight weeks' time.

PRICE-LISTS, CIRCULARS, &c.

LAUNDER, HARTER & HARSH MFG. COMPANY, Wabash, Ind.: Catalogue and price-list of Harness Specialties, comprising Check Holders, Check Bars, Check Loops, Rein Gag Swivels, Buckles, Trace Chain Carriers, Line Fasteners, Line Guards, Shaft Tugs, Harness Snaps, &c. The catalogue also illustrates a variety of Harness Trade Supplies.

THE GOSHEN CHURN & LADDER COMPANY, Goshen, Ind.: Catalogue of specialties, comprising Step Ladders, Churns and Lawn Swings. The Step Ladders are named the Security, Electric, Genuine Hill, No. 1, Clipper and Diamond. The Churn is the Improved Oval and the Lawn Swings comprise the Hoosier, the Big Four and the Bonanza.

H. A. WHITTEMORE & Co., 50 Pearl street, Boston, Mass., importers and wholesale dealers in fine Fishing Tackle, Skates and Specialties, have issued the first edition of a trade catalogue of the goods they handle, containing 80 pages, each 11¼ x 9¼ inches. This concern are sole United States agents for William Bartleet & Sons', Redditch, England, Fishing Tackle and G. M. Skinner's Trolling Spoons.

BUTLER BROTHERS, Chicago: Catalogue entitled "Our Drummer." This catalogue is the only traveler sent out by the firm, who have three large houses, one located in Chicago, another in New York and another in St. Louis. The firm handle an enormous variety of goods, their trade extending into practically every line of merchandise. Their trade is exclusively confined to dealers. The catalogue consists of 326 pages of large size and is profusely illustrated.

T. H. CHUBB ROD COMPANY, Post Mills, Vt.: Illustrated catalogue of Fishing Rods and Anglers' Supplies, including Rods in great variety, Reels, Leaders, Artificial Flies, Hooks, Fly Hooks, Tackle Cases, Baskets, Nets and various goods of this character.

ST. JOSEPH PUMP & MFG. COMPANY, St. Joseph, Mo.: Circulars describing the Perfection Water Elevator and Purifying Pump designed for well and cistern. Many features of superiority are claimed for this Pump. Galvanized steel tubing is used. It is light, can easily be lifted out of the well to repair chain, and is stiff and neat. It may be used with either iron or rubber buckets. The large reservoir at the top is referred to as preventing the water from wasting. The bucket used in the Pump is made of a single piece, open hearth steel, double lapped seams, no solder being used. The sprocket chain is another feature specially mentioned.

CHAMPION TOOL & HANDLE WORKS, Evart, Mich.: Catalogue H, representing their extensive line of Lumbering Tools of the latest improved patterns. They refer to this as the thirtieth year in which they have been engaged in the exclusive manufacture of Lumbering Tools and Handles, and state that their equipment is distinctly modern. They give special attention to the packing of their Tools, and have devised a package which, they state, insures such protection to the goods that they invariably reach the buyer in perfect condition, while also effecting a saving in freight, as Tools boxed or crated are classed under a lower tariff.

THE PHENIX WIRE WORKS, Detroit, Mich.: Pamphlet giving revised price-list, 1902, of Wire Cloth.

READING HARDWARE COMPANY, Reading, Pa.: Pamphlet giving price-list and describing in detail their Ogden Automatically Regulated Liquid Door Check and Spring. Illustrations of a few of the large and finely appointed buildings in which this Door Check is used are also given.

THE ELLIOTT & REID COMPANY, Richmond, Ind.: Folder relating to their U. S. Fence, Field Fence, Hog and Stock Fence, Garden and Lawn Fencing, Richmond Gate, Oak Corn Cribs and Fodder Bins, Diamond Lawn Fence and Royal Spring Steel Fencing.

WM. T. WOOD & Co., Arlington, Mass.: Pamphlet devoted to their summer Ice Tools. It illustrates Chisels, Tongs, Axes, Saws, Hooks, Shavers, Breakers, Scales, Skids, Runs, &c. A complete 52-page catalogue will be sent on application.

SUPPLEE HARDWARE COMPANY'S NEW CATALOGUE.

THE SUPPLEE HARDWARE COMPANY, Philadelphia, Pa., have just issued a new illustrated and descriptive catalogue, containing 1079 pages, each 12¼ x 9¼ inches, bound in cloth and heavy boards. It is exceptionally compact and comprehensive. The illustrations have been reduced in size, full size cuts having been entirely discarded, so that this catalogue is said to contain 50 per cent. more matter than their last one, although the number of pages has been reduced nearly a third. The goods are grouped in departments as follows: No. 1, Locks, Latches and Builders' Hardware; No. 2, Mechanics' and Edge Tools, Bolts, Screws, Nails, Tacks, Brads, Wire, &c.; No. 3, Lawn Mowers, Steel Goods, Shovels, Spades, Chains, Curry Combs, Brushes, &c.; No. 4, Cutlery, Plated Ware, &c.; No. 5, House Furnishing and Miscellaneous Hardware; No. 6, Sporting Goods, Guns, Rifles, Revolvers and kindred goods. In compiling the catalogue the company state that they have had in view principally the welfare of the trade, their desire being to place in the possession of their customers a convenient and comprehensive reference book on Hardware and related lines. The catalogue reflects great credit on the company and will doubtless be appreciated by the trade.

HENRY DISSTON & SONS' 1902 CATALOGUE.

HENRY DISSTON & SONS, Philadelphia, Pa., in issuing a complete catalogue of nearly 200 pages illustrating and describing their extensive lines of Saws, Saw Tools, Files, Plasterers' Tools, Cane Knives, Pruners and a large number of fine Mechanics' Tools, including Squares, Gauges, Bevels, Levels, Screw Drivers, together with Kraut and Slaw Cutters, Graters and similar goods of their manufacture, enumerate a number of new goods recently added to their line. Among these are a number of Inserted Tooth Circular Saws (American Saw Company's patterns), together with a variety of Cross Cut and Felling Saws, Wood Saws and Bucks, Cutter Grinders, Saw Punch, Butchers' Saws, Trowels, Cane Knife and special Hand and Compass Saws. On one page of the catalogue is a chronological list of the various Saw making concerns absorbed by the corporation from Johnson & Conway in 1857 to the American Saw Company in 1901, 17 in all.

HENRY AND WILLIAM MARRIOTT, brothers and partners in the Hardware business at Baraboo, Wis., died of pneumonia within a few days of each other. Henry died March 12 and William died March 16. Both were ill only a few days. They conducted one of the largest retail Hardware stores in Wisconsin and were very prominent in all movements connected with the progress of their city. They were born in England, came to this country in 1871 and had been in the Hardware business since 1880. They were in Milwaukee during the recent visit of Prince Henry and caught cold while waiting his arrival.

Theodore S. De Long of Glens Falls, N. Y., has attained the distinction of completing 50 years in the Hardware business. On March 3, 1852, Mr. De Long entered the employ of Herman Peck. In 1861 Mr. De Long and his father formed a copartnership under the style of De Long & Son. Fire destroyed the store in 1864, but temporary quarters were built, which they occupied for a year. At the end of that time they took possession of the building, 120 Glen street. Subsequently John B. De Long entered the firm, changing the style to De Long & Sons. After the death of the senior member in 1901 the name of the house became De Long Sons, as at present.

D. S. Romine has bought the Hardware, Stove and Agricultural Implement business of La Baw & Co., Bartlett, Kan.

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The National Retail Hardware Dealers' Association.

THE third annual meeting of the National Retail Hardware Dealers' Association was held in Chicago last week. The headquarters were at the Palmer House, and the sessions began Wednesday morning, the 19th, and continued until Thursday afternoon. The fol-

by fire with no insurance; the association had a number of unpaid bills, and the secretaries of the affiliated States were slow, possibly careless, about sending their State dues to the national treasurer, so that the condition which confronted the new national officers was a depleted treasury and very little money in sight, and what was received must be applied on our heritage of debts.

Few men comprehend more clearly than I do the labor, the difficulties and the opposition that the first officers had to contend with. In fact, the wonder is that their debts were not larger, for they wrought mightily for the establishment of the national organization, whose influence we now enjoy and for whose growth and increasing power we are so jealous, and their names will always be held in high honor and esteem in the annals of this association. At the meeting last March Kentucky joined the national body, so that the national commenced its first year composed of eight affiliated States. We meet here to-day to view the labors of the year and to plan for the future.

GROWTH AND PRESENT STATUS OF THE ASSOCIATION.

During the year the following States have by unanimous vote joined the National Association: Arkansas, Pennsylvania, Wisconsin, Ohio and Minnesota—five in all. The total membership of these States is approximately 1100, the total membership of the eight original States is approximately 1200, the increase in membership of the eight original States for the past year is approximately 300, making a total membership of the national



lowing delegates from the various States associations affiliated with the national organization were present:

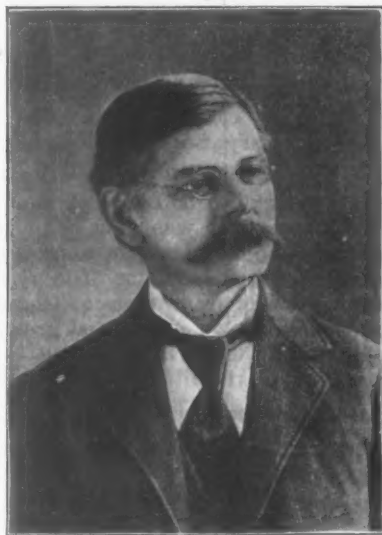
ARKANSAS: John M. Pittman, Prescott.
ILLINOIS: H. G. Cormick, Centralia; L. H. Clark, Rockford; Z. T. Miller, Bloomington; William T. Gormley, Chicago.
INDIANA: W. P. Lewis, New Albany; M. L. Corey, Argos; Irving A. Sibley, South Bend; Sharon E. Jones, Richmond; H. Burkert, Gosport.
IOWA: W. A. McIntire, Ottumwa; W. H. Keating, Ottumwa; H. A. Cole, Council Bluffs.
KENTUCKY: Paul Wagner, Louisville; Joseph C. Kirchdorfer, Louisville; J. C. Frederick, Owensboro.
MICHIGAN: Geo. W. Hubbard, Flint; Henry C. Weber, Detroit; Charles F. Bock, Battle Creek.
MINNESOTA: W. H. Tomlinson, Le Sueur; Charles F. Ladner, St. Cloud; J. F. McGulre, St. Paul.
MISSOURI: Fred. Neudorff, St. Joseph.
NORTH DAKOTA: H. N. Joy, Hamilton; C. N. Barnes, Grand Forks.
OHIO: W. P. Bogardus, Mt. Vernon; George M. Gray, Coshoc-ton; Frank A. Powers, Norwalk.
WISCONSIN: O. P. Schlafer, Appleton; C. A. Peck, Berlin.

WEDNESDAY MORNING SESSION.

After the minutes of the last annual meeting had been read and approved President W. P. Lewis read his annual report. Among other things, he said:

Extracts from President Lewis' Address.

One year ago in the month of March the delegates to the Interstate Retail Hardware Association assembled in this city at the Sherman House. At that meeting the name of the association was changed to the National Retail Hardware Dealers' Association. While seven States only were affiliated with the Interstate, the argument was made that the intent and the expectation was that the work should become national, and that the name should indicate the intent, and so the question of the name was settled. The outlook at that time was extremely discouraging. The officers of the Interstate had spent considerable money; one had suffered a severe loss



H. G. CORMICK, President.

body of 2000 members. The showing for the year is an increase in the number of States affiliated of 62½ per cent., and an increase in membership approximating 110 per cent.

The position and the prestige of the National Association in the commercial world of to-day are so greatly in advance of the position occupied one year ago that we surely have cause for great encouragement, but no elation. We are now taken seriously both by the manufacturer and the jobber, and good evidence is at hand to show that genuine efforts are being made to adjust conditions to conform with the retail point of view. But the battle is not won. We have only commenced the serious work. Eternal vigilance, eternal labor and eternal organization is the purchase price that must be paid for the establishment of fairness in our trade relations.

The president then referred to the importance of properly financing the association. He recommended the issuance of a yearly manual, the establishment of a national fire insurance association and the payment of

a nominal annual salary to the president and treasurer and a liberal salary to the secretary. He recommended that the date of the annual meetings of the State associations be a matter of conference between the national secretary and the secretaries of the State associations. He also recommended that active negotiations be entered into with such associations as had not yet joined the National Association, to secure their membership in the National Association. In conclusion he said:

I am not visionary. I am not unduly enthusiastic, but I have an abiding faith that through the labors of

sary steps. The question of the payment of a salary to the president, treasurer and secretary was referred to the Executive Committee.

An invitation was read requesting the presence of the delegates at a banquet to be given at the new Hardware and Manufacturers' Club in honor of the National Retail Hardware Dealers' Association, by W. H. Bennett of the Reading Hardware Company, D. W. Simpson of the Wilcox Mfg. Company and J. D. Warren of the J. D. Warren Mfg. Company. On motion the invitation was unanimously accepted. The remainder of the session was devoted to the discussion of the recommendations in the president's report.

THURSDAY MORNING SESSION.

The greater part of this session was consumed in a general discussion of subjects of direct and immediate interest to the association, involving questions relating to the constitution and by-laws and the relations of the various trade elements with each other, but no action in this line was taken which is of public interest.

A vote of thanks was passed to Messrs. Bennett, Simpson and Warren for the banquet which had been enjoyed on the previous evening.

On motion of Mr. Jones of Indiana, the thanks of the association were tendered the officers who had so ably and efficiently served the association during the past year.

THURSDAY AFTERNOON SESSION.

Before the programme was announced Mr. Cormick came forward and addressed President Lewis as follows:

Mr. President and Gentlemen of the Convention: I have been selected by my colleagues to perform a pleasant duty. We have learned that our president has recently become a benedict and has taken upon himself a helpmate. We all respect and love her because he does. Therefore, Mr. President, it is my pleasure to present to you the contents of this envelope for Mrs. Lewis, with the hope that she will purchase for her own individual use and pleasure some memento of our kindly feeling. Convey to her our heartiest



C. N. BARNES, Vice-President.

the National Association there will be reared a bulwark of defense that will carry pleasure and profit to every dealer in the land.

Secretary Corey's Report.

Secretary M. L. Corey read his annual report, in which details were given of the work done during the year, and specific mention was made of progress accomplished in securing the correction of some of the troubles which beset the retail merchant. His report showed that substantial benefit from the establishment of a national organization has begun and that great encouragement to continue in the work is now felt by those who have been conducting the affairs of the organization.

Appointment of Committees.

The president announced the appointment of the following committees:

CONSTITUTION AND BY-LAWS: W. H. Tomlinson, Minnesota; Fred. Neudorff, Missouri; F. A. Powers, Ohio; Paul Wagner, Kentucky; John M. Pittman, Arkansas.

RESOLUTIONS: C. A. Peck, Wisconsin; W. A. McIntire, Iowa; W. P. Bogardus, Ohio; Charles F. Bock, Michigan; C. N. Barnes, North Dakota.

NOMINATIONS OF OFFICERS: Sharon E. Jones, Indiana; O. P. Schlafer, Wisconsin; H. N. Joy, North Dakota; Jos. C. Kirchdorfer, Kentucky.

PRESS: Z. T. Miller, Illinois; H. G. Cormick, Illinois.

AUDITING: Irving A. Sibley, Indiana; H. A. Cole, Iowa.

WEDNESDAY AFTERNOON SESSION.

Treasurer H. G. Cormick's report was read, showing the association to have discharged the indebtedness carried over from the preceding year, with a sufficient balance on hand to cover current expenses. This was a gratifying exhibit, indicating that the finances of the association will hereafter be on a much better basis. The report was referred to the Auditing Committee.

The convention then proceeded to the discussion of the various recommendations contained in the president's report. After a full expression of the opinion of the delegates, it was decided that the association should issue a yearly manual. The decision was also made that a national fire insurance association should be organized in connection with the work of the association, and the Executive Committee was authorized to take the neces-



M. L. COREY, Secretary.

and best wishes and accept our greatest congratulations, and with this donation we bid you Godspeed and prosperity.

President Lewis responded as follows:

Mr. Cormick and Gentlemen: I can hardly express how much I appreciate this action on your part. I have never attended a Hardware convention yet that I did not receive some marked benefit. Mrs. Lewis, who is a lady of very high appreciative qualities and disposition, I know will join with me in thanking you

most sincerely for this delightful courtesy. I thank you indeed very much.

Election of President and Vice-President.

The secretary read the following report of the Committee on Nominations:

FOR PRESIDENT, H. G. Cormick, Centralia, Ill.

FOR VICE-PRESIDENT, C. N. Barnes, Grand Forks, N. D.

It was moved by Mr. Bogardus that the report of the committee be adopted and that the secretary be instructed to cast the vote of the association for the



W. P. BOGARDUS, Treasurer.

gentlemen nominated. The motion was carried, the secretary cast the vote as directed and they were declared elected.

Mr. Cormick endeavored to persuade the delegates to elect some other member president, but they declined to do so, and he was duly installed in the office for which he had been chosen.

Executive Committee.

The secretary read the following list of members selected by the Nominating Committee to act as Executive Committee for the ensuing year:

W. P. Bogardus, Mt. Vernon, Ohio.

O. P. Schlafer, Appleton, Wis.

C. F. Ladner, St. Cloud, Minn.

W. A. McIntire, Ottumwa, Iowa.

Sharon E. Jones, Richmond, Ind.

On motion the report of the committee was adopted and the secretary was instructed to cast the vote of the association for the gentlemen nominated. The secretary cast the vote and they were declared duly elected.

The association then proceeded to discuss the various features of the organization of a fire insurance company, also the matter of department stores and catalogue houses, as well as the parcels post bill pending in Congress. The Executive Committee was requested to take up the question of the advisability of sending a representative to Washington to assist in defeating the bill referred to.

President-Elect Cormick's Address.

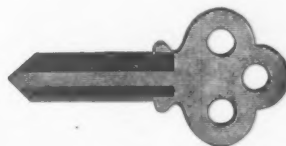
At the close of the programme President Cormick addressed the association as follows:

Gentlemen of the convention, I desire to say to you before you adjourn a few words in connection with this position which you have forced upon me. I have attended each meeting of this national organization since its beginning. I have watched its progress with considerable solicitude. In my visits during the past year to the different State association conventions I found what appears to me to be something of a menace to the life and efficiency of this national body. It is

this: All of you who have studied the history of our country will remember the condition of the 13 colonies that formulated this great Union. You will remember the strife and bickerings they had with each other. You will remember what a struggle was had to endeavor to get them to adopt the constitution as made, and it occurs to me that we in these several State associations that have affiliated with this National Association are in exactly the same condition that they were.

Every delegate here to-day recognizes the fact that in the strength of this national body is the strength of this movement. Can you give me any good and sufficient reason why the several bodies that constitute this one should not subordinate their interests for the benefit of the whole? Can you tell me why, when we come to these convocations with the best ability and talent that the States can send here, their deliberations and their judgments should not be taken and accepted and work follow along the lines in which they point for the benefit of all? Take this home with you? Think of it, and when your convention assembles next year let it be said to your honor and credit that the results of the meeting were for the benefit of the whole body.

I want to say to you further, in concluding the work of this convention, that you have had an administration in the past year that, in my opinion, considering the circumstances that surrounded the executive of your body, was unparalleled. The results attained have been enormous, considering the difficulties they were obliged to overcome. I cannot say too much of this outgoing administration, and I have grave doubts as to the results of the incoming administration; but I have to say to you that I shall give to you the best that I have, and I shall expect and demand of you in return—every member of every State association—loyalty, energy and enthusiasm. Don't forget that individual



Dinner

tendered delegates to

National Retail Hardware Dealers Convention

by

W. H. Bennett

Manager Reading Hardware Co.

J. W. Simpson

President Wilcox Mfg. Co.

J. D. Warren

President J. D. Warren Mfg. Co.

March nineteenth

Nineteen hundred and two

6:30 P. M.

Hardware and Manufacturers Club
230 So. Clark Street

Menu Cover.

members with the right spirit, with tact and judgment, can accomplish more than they dream of with well directed effort.

In accepting this position for the current year I have grave doubts for the future. I enter upon this work with fear and trembling, but if you will help to hold up my hands I hope to say when we convene again in

the city of Chicago that we have done well. I thank you.

On motion the convention adjourned subject to the call of the Executive Committee.

Secretary and Treasurer Chosen.

At the conclusion of the convention the Executive Committee met and re-elected M. L. Corey of Argos, Ind., secretary, and selected W. P. Bogardus, Mt. Vernon, Ohio, as treasurer for the ensuing year.

THE BANQUET.

The delegates in attendance at this convention enjoyed a banquet on Wednesday evening at the new Hardware and Manufacturers' Club, which was tendered them by W. H. Bennett of the Reading Hardware Company, D. W. Simpson of the Wilcox Mfg. Company and J. D. Warren of the J. D. Warren Mfg. Company. In addition to the delegates there were present on this occasion several friends of the hosts, as well as representatives of the trade press. The tables were arranged in the form of a horseshoe. The menu was tastefully

entertainment, I can assure you, as one of the committee, are very proud of you. We are very glad to have you with us for many reasons. We needed for years to have a home here for the Hardwaremen that center in and about Chicago. New York has her magnificent millionaires' club, but we in Chicago have never had anything except the tunnel or the park, or some such place as that, and in certain seasons of the year that is uncomfortable, in the climate we have. So this club, by the way, is especially fortunate. We feel proud as a committee connected with it of giving you the first modest meal that has been served since there was a Hardware Club in Chicago. This is the first spread given, and we are very glad indeed to give it to you.

I see gentlemen here whom I had the pleasure of visiting a quarter of a century ago. I see other men so young that I have to ask who they are, and so this mixing and mingling together, I am sure, from your deliberation, is profitable and good. I was told by one old friend in walking over that this was the best and most businesslike meeting you have had and the most earnest. We are living in times when men are ascertaining and

| | | |
|-----------------|-------------------|-----------------|
| W. W. McIntire | F. A. Powers. | W. W. Roberts |
| H. G. Cormick | Frank | Geo. W. Cope |
| J. T. Miller | Frank | S. P. Johnston |
| D. W. Simpson | A. A. Norton | Frank Hendrick |
| M. P. Lewis | | Geo. W. Smith |
| M. L. Corey | Mr. J. Gormley | C. A. Peck |
| J. D. Warren | Irving A. Sibley. | John Pittman |
| C. A. Peck | L. F. Conrad. | Geo. W. Gray |
| Chas. F. Ladner | Paul Wagner | W. P. Bogardus |
| W. H. Tomlinson | J. B. Kirchdorfer | M. P. Howard |
| W. H. Heating | Sharon C. Jones | J. C. Frederick |
| J. F. McGuire | | Wm. C. Weber |
| | | Chas. B. Bock |
| | | H. N. Joy |

Participants in the Banquet.

gotten up, forming a souvenir of the event. The tables were decorated with flowers and ferns.

A feature of the banquet was the complete absence of wine, which was the subject of approving remarks by the guests. After the coffee and cigars Mr. Bennett assumed the role of toastmaster, and called upon a number of those present for remarks. An address of welcome was made by D. W. Simpson, who spoke as follows:

Mr. Simpson's Address of Welcome.

I do not consider this a proper place for an address of welcome. Our welcome is before you. You have tasted it, and you are not through with it, and a speech at this time, even if I were able to make one, would not be in good taste. I feel like the Irishman who was told that he should awaken a man at a hotel at six o'clock in the morning and then his work was done. The Irishman, who acted as porter during the night, thought it over. It got to be one o'clock and he wanted to go home where it was warm. He went up to the man's room at four o'clock in the morning and rapped on the door. The man said, "What do you want?" The Irishman said, "Have you not a call at six o'clock?" "Yes," says the man. "Well," says the Irishman, "it is four o'clock now and I am going home, and I just came up to tell you that you had two hours yet to sleep in." I am up here to tell you that you have two hours to sleep yet, and as much more as you want.

We who have the pleasure of giving you this little

finding out that they are brothers, both as manufacturers and dealers. I believe that in the next quarter of the century those that will be here then will see a still greater change than we have seen in the past quarter of a century, and it is something of a consolation that we should have some little hand in this.

Whenever you are in Chicago, make this your home. You will find a hearty welcome here. You will find the same gentlemen here that are here now, and many of the gentlemen who have recently been elected to the Hardware Club as its officers.

An appropriate response to Mr. Simpson's address was made by ex-President Lewis.

Responses to the call of the toastmaster were made by Irving A. Sibley, H. G. Cormick, M. L. Corey, C. A. Bock, H. N. Joy, W. A. McIntire, W. H. Tomlinson, W. P. Bogardus, H. H. Roberts, S. T. Johnston, C. A. Peck, Paul Wagner, J. F. McGuire, W. T. Gormley, John M. Pittman, S. E. Jones and Geo. W. Cope. Before the speaking had been concluded Mr. Bennett was called away by a telegram compelling him to take a train for a distant city on important business, and Mr. Simpson took his place as toastmaster. Both gentlemen acquitted themselves admirably in this capacity, contributing greatly to the pleasure of the occasion. The speeches made by the delegates were unusually bright and entertaining, and it was not until a late hour that the banquet room was deserted.

An unfortunate occurrence sadly interfered with the pleasure of H. Burkert of Gosport, Ind., one of the delegates from his State. Mr. Burkert arrived in Chicago on Sunday evening, and shortly after leaving the railroad station was attacked by footpads, and so badly injured that he suffered from the effects of his encounter during the entire meeting of the association. He nevertheless managed to attend the sessions of the convention, and, despite his wounds, took part in the business transacted.

NOTES ON FOREIGN TRADE.

BRITISH LETTER.

Office of *The Iron Age*, HASTINGS HOUSE,
NORFOLK ST., LONDON, W. C.

The Week's Hardware Trade.

DURING the past week we have had spring weather, and its effect has been instantly felt in such lines as Garden Tools and furniture. The building trade is also showing improvements in various sections of the country, with the result that Builders' Castings and Joiners' Tools are in better request. The home trade, however, is not in quite such a good way as British manufacturers would like. On overseas account some good indents have been received from New Zealand and South America, while the trade with India continues steady. We are not doing very much at the present time with Europe, orders that come from there being sparse and unremunerative. Iron Hurdles, Fencing and smaller goods are being bought freely at the present time, and the workmen engaged in these lines are unusually busy. The same is also true of Edged Tools and Horseshoes. There is a brisk demand for chromographic enameled plates for advertising purposes, while the trade in Nuts, Bolts, Hinges, best Gun Locks and coach work is fairly satisfactory. The recent news from South Africa has had a slightly depressing influence, and it is now felt that the war will continue longer than was anticipated. This has induced greater caution in consigning goods to South Africa, although, of course, the actual effect from the South African point of view cannot be made known for a fortnight or three weeks. It is recognized that stocks in South Africa are in a depleted condition, and the problem facing exporters at the moment is how far it is wise to fill up buyers in view of the problematical military situation. In Sheffield, the lighter branches of trade show slight improvement. Shovel and Fork makers are in full work, and the export trade in these lines is better than for some time past. But there still continues in Sheffield a general feeling of depression. During the month of February the exports of metals and articles manufactured therefrom amounted to \$13,330,000, an increase on February of last year of nearly \$85,000, but a decrease of \$6,000,000 compared with February of 1900. The volume of business transacted during the month on overseas account is, however, largely maintained on account of the reduction in prices compared with 12 months ago. It invariably happens after a trade boom, when prices are high and output great, that output is apt to be maintained for some period after the boom, in consequence of reduction of prices. Trade is following this course at the present time, and I see no reason to depart from my opinion previously expressed in this column to the effect that, on the whole, trade is becoming less prosperous, and it is tolerably certain that adverse influences will more strongly assert themselves in the near future. Turning to some of the prominent items included in this section, there was a decrease of \$5000 in the exports of Cutlery. The most marked falling away was the trade with Germany and Belgium. Our exports of Cutlery to Brazil fell also, but showed a slight increase to the Argentine Republic. The exports of Hardware increased by \$25,000, a noticeable improvement being shown with the United States. In February, 1901, the value of Hardware exported to the United States was just over \$11,000; last month it was \$29,000. A certain proportion of this, while going to New York, would probably have as ultimate destination Canada, and may in part be ac-

counted for by the shortage of raw material in the United States. The exports of Implements and Tools showed a decline of about \$20,000, while there was an increase in the exports of Wire both of iron and steel of \$25,000. The exports of galvanized sheets also showed healthy improvement, rising from \$1,040,000 to \$1,300,000. This increase is largely accounted for in exports to British South Africa, British East Indies, Australia and New Zealand. The foreign trade in tin plates and sheets also advanced in a marked degree, rising from \$1,350,000 to \$1,570,000. This increase is entirely accounted for by increased purchases from the United States. In February, 1901, the United States bought tin plates from this country to the value of \$2,250,000, while last month the figure rose to no less than \$4,400,000, doubtless due to contracts entered into on account, first of all, of the strike last year in America, and, secondly, to the continued high price of iron and steel on your side of the Atlantic.

American Saws in England.

A British commercial traveler, writing to an English contemporary, says:

To-day I had occasion to go into a large Ironmonger's shop and got into conversation with the manager as to his selling American Saws. He is strongly of opinion that the British Saw is nowhere in comparison with the American article. He showed me an American Saw. He doubled up the blade and put the end of it through the handle, and then let it straighten itself out, which it did, and was as straight as an arrow. Joiners who purchased one, he told me, always recommended it in preference to the British article. I was further told that a Sheffield firm were installing a machine to make a similar Saw. I was glad to hear it, for the sooner the Sheffield Saw makers wake up to the fact that the saw trade is likely to go the way of the Scissors the better.

American Saw makers should make use of this as an advertisement, for the traveler himself comes from Sheffield.

The Sheffield Scissors Trade.

The reference in the above letter to the Sheffield Scissor trade reminds me that Sheffield is at the present time in the throes of a discussion as to how the Scissors manufacturers in Sheffield can meet the competition of German houses. It is freely asserted that German Scissors are now bought in this country in preference even to the Sheffield product; that they are cheaper, while at the same time being better finished; and that they provide the retailer with a larger margin of profit. Sheffield manufacturers affirm that they are handicapped all the time with trades union conditions. Personally, I do not believe this. I think it is due more markedly to ingrained conservative habits both among employers and employed. Thus, Sheffield machinery in many instances is much older and less effective than the newer machinery with modern improvements which is used by the German makers. There can be no doubt that the recent importations of Cutlery into this country both from America and Germany are creating some uneasiness.

Refrigerators.

Is there anything wrong with the Refrigerator trade? I should have thought that during the past six weeks heavy consignments of Refrigerators would have been crossing the Atlantic, but patient search from the middle of February up to to-day only discloses a few shipments of small proportions.

The sale of Refrigerators in this country is, I am convinced, on the increase. It may be, of course, that heavy shipments were made before Christmas, in readiness for the spring sales, or, upon the other hand, it may be a little early, as Refrigerators are not required in this country until the middle or end of June.

Acetylene Generators.

Some time ago a Parliamentary committee was appointed to inquire into the whole subject of Acetylene Generators. Their report has now been issued as a Parliamentary paper. As American manufacturers of Acetylene Generators would probably be glad to know precisely what is being thought of this new industry on this side of the Atlantic, I think the following quotation from the committee's report sums up fairly average opinion:

A large proportion of the Generators examined belong to the automatic class. In these the object is the gradual generation of the gas as used, whereas in the nonautomatic types the whole of the gas which can be generated from a given charge of carbide is evolved in a short time, and a gas holder has to be provided large enough to contain it. The contention is that the generation of the gas as used, and the absence of a large gas holder, are advantageous or convenient. When all goes well this may be so, inasmuch as, under the skilled supervision and favorable conditions of the tests made by us serious difficulties did not arise, and in general the apparatus worked well. We are not satisfied, however, that, under the varied conditions of use, especially with unskilled labor, this would always be the case, and we do not think that the advantages aimed at by the designers of automatic apparatus are sufficient to make it worth while to incur the possible trouble which we fear may be met with in the practical use of automatic Generators, especially those of complicated design. In certain circumstances, with due safeguards, the employment of automatic Generators may be admittedly convenient.

We think it right to point out that, while the Generators have in no instance shown evidence of being otherwise than safe under the conditions of the test to which we have subjected them, many are, in our opinion, of unnecessarily and undesirably complicated design, and some are not sufficiently strong in construction. On the whole, having regard to the conditions of use which must often prevail, we consider that in the selection of an Acetylene Generator regard should be had to the following desiderata: 1, Simplicity of action and design; 2, strength of construction; 3, high efficiency, as indicated by the yield of gas per pound of carbide; 4, low pressure in Generator; and 5, facility of removal of the residue.

The Trade of Portugal.

We do not hear much of Portuguese trade, and yet in point of value it is not to be despised. During the year 1900 Portugal bought from the United States merchandise to the value of 9,135,000 milreis and exported to America 1,413,000 milreis. I may perhaps say that a milrei is, as nearly as possible, \$1.07. The exports and imports of Portugal with the United States amounted to 10,500,000 milreis, as compared with 34,317,000 milreis trade done with Great Britain. Portugal bought from America about the same quantity of commodities as from Germany, but, upon the other hand, Germany bought more largely from Portugal. Altogether the import trade of Portugal amounts to over 75,000,000 milreis, which is good buying considering the size of the country and the high protective tariff. One of the most promising fields for trade with Portugal is electrical apparatus. The successful introduction of electric tramways into Lisbon, it is stated, will encourage the use of electricity. At present electric light is hardly used at all in Lisbon, either in the streets or buildings, so that on its general introduction there will be a great demand for all kinds of electric fittings and apparatus. It is important to be prepared for this trade, for once in general use in the capital, the introduction into most of the small towns and villages will only be a matter of time. There should also be an opening for young electrical engineers, and as they could learn the language in Portugal, which is also spoken in Brazil, and as Brazil is bound in the nature of things soon to become one of the most important customers of the United States, it seems, on the face of it, a good idea for any young person desiring to acquire a knowledge of the language to spend a few months in Portugal. He would thus at the same time learn a language which can be of great use to him in South America, and make himself acquainted with European methods and requirements. There is a commercial directory of Portugal, entitled "Anuario Commercial de Portugal," published at 50, Largo de Conde Barao, Lisbon, price 2 milreis. A copy of this publication might enable Hardware exporters as well as others to open up correspondence. I may add that there was a marked increase in the imports of machinery and manufactured articles in 1901 over the year 1900.

Galvanized Roofing.

I would like to draw the attention of American exporters to the prospects of Galvanized Roofing in the near future. Over here it is recognized that prices must stiffen considerably. The war, of course, retards the movement, but it is recognized that South African buyers will, before long, require many thousand tons monthly for several months after the actual cessation of hostilities, and it is agreed that at the present mo-

ment there is not a month's supply in the coast ports. Against this, however, must be set a slight weakening of the market in Australia, but immediately hostilities show signs of coming to a conclusion there will undoubtedly be an abnormal demand for Galvanized Roofing. Prices will be high, and as shipment from New York or Philadelphia is cheaper than from Southampton, it may well be that with Galvanized Goods America might make heavy inroads upon the South African market.

A Century Old.

The firm of John George & Sons of 18 Great Alie street, London, E., is now a century old, and under the management of the third generation. This house have during all these years devoted themselves to the Hardware trade and have built up a valuable connection in such lines as Nails and Bolts, Saws, Files, Wood Ware, Farming Tools and Hoes. They were one of the first to perceive that American Hardware was bound to come into this market, and have accordingly from time to time obtained valuable agencies. At the present time they are the sole consignees of Kearney & Foot Files and Bishop Saws, in addition to a number of other less well-known brands in other goods. It is perhaps hardly accurate to describe them as agents, inasmuch as, strictly speaking, they are jobbers. They are agents, however, in the sense that they will only handle American goods the sale of which they have sole control, but, as a matter of fact, they stock heavily and pay for everything they receive. They have succeeded in securing a reputation for prompt delivery of goods, due to carrying a heavy stock, and propose to continue this in the future. At the present time more than half of their goods are of American origin. A day or two ago I went round their large warehouses and found there American Saws and Files, Farming Tools, Nuts and Bolts and Wood Ware, all wrapped up in characteristically American packing. The principals of this house inform me that they are in a position to market other American goods, and will be glad to hear from American exporters who are prepared to deal exclusively with them and receive, of course, cash. It should be clearly understood, however, that they are not agents in the sense that they build up a connection for an American house. During my recent visit to the United States I found a number of American houses, however, who would be only too glad to get into touch with a house of good repute and credit, and who did not want to build up a large number of small accounts. To any such firm as this John George & Sons are the very people to whom to apply. It often happens that where a jobbing house buys to sell again it is difficult to sell to other jobbers. I am assured, however, by S. B. George, the junior partner, that they have no difficulty in this way, having hitherto always been able to offer such terms to their fellow merchants (jobbers) as to insure good sales. But the travelers of John George & Sons are to be found all over England, and as they have now expressed a desire further to extend their American connection, it would not be a bad idea for American houses to communicate with them direct.

The Trade of Austria-Hungary.

With reference to some remarks recently made by me as to the prospects of American trade in Austria-Hungary, the following figures will give some idea as to the extent of the trade in that important European area:

| | Imports. | | Exports. | |
|--------------------------------|--------------------|---------------|--------------------|---------------|
| | Quantity. Tons. | Value. | Quantity. Tons. | Value. |
| Raw stuffs..... | 3,835,000 | \$203,540,000 | 4,670,000 | \$207,810,000 |
| Half manufactured stuffs | 110,000 | 48,145,000 | 115,000 | 49,725,000 |
| Manufactured stuffs | 310,000 | 97,560,000 | 300,000 | 97,125,000 |
| Totals..... | 4,255,000 | \$349,245,000 | 5,085,000 | \$354,660,000 |
| Raw stuffs..... | 6,965,000 | \$170,645,000 | 6,930,000 | \$172,350,000 |
| Half manufactured stuffs | 1,080,000 | 63,165,000 | 960,000 | 55,540,000 |
| Manufactured stuffs | 705,000 | 170,770,000 | 715,000 | 165,625,000 |
| Totals..... | 8,750,000 | \$404,580,000 | 8,605,000 | \$393,515,000 |

MISCELLANEOUS NOTES.

Elk Bicycles.

The Allerton-Clarke Company, 97 Chambers street, New York, and 118 Lake street, Chicago, are now manufacturing their line of Elk bicycles at their works in Paterson, N. J., instead of at Anderson, Ind., as formerly. The product will be concentrated on four models of two styles, which, with the options offered, will cover the demands of riders using a high grade bicycle. There are two models of the rigid frame, listed at \$40 each, for both sexes, and two models of the cushion frame listing at \$50 each. The cranks are in one piece; the hubs of such construction that the wheels may be removed from the frame without springing the forks or disturbing the adjustment of the bearings, by taking off one axle nut, when the axle can be pulled from the hub and the wheels removed. The frames, of Shelby seamless tubing, include a three-plate crown of new design, an attractive head, with flush head set, and a short and stiff rear frame, built with oval forks and double taper stays. All cups and cones are turned from the solid bar of steel, no pressed bearings being used. The chains are nickel steel, with chamfered sides, full nicked and polished. There are five handle bars of the Hussey and Kelly makes to choose from, as well as five saddles. Wheels will be equipped with the Barwest or New Departure coaster and brake at an additional charge of \$5. The various details are described in a new catalogue for the season just issued.

Regular and Special Hunting Knives.

Marble Safety Axe Company, Gladstone, Mich., are manufacturing regularly sportsmen's Ideal hunting knives in 5, 6, 7 and 8 inch blades, but to order they are prepared to make any length up to 14 inches and any special style, weight or length of blade. They are made regularly with laminated leather handles with brass and fiber trimmings, finished with polished stag horn tips; also with handles of polished German stag with fiber and brass trimmings at each end of the handle and polished stag horn tips. These knives can also be furnished at an extra price with full German silver trimmings, and the knives are supplied at no extra charge with black or russet leather cases.

Veeder Bicycle Cyclometer.

The Veeder Mfg. Company, Hartford, Conn., manufacturers of cyclometers for bicycles, odometers and counters, while not varying the appearance of their bicycle cyclometers outwardly and retaining the same form of mechanism, have strengthened the case by making the giv larger and stronger and are supplying a much heavier bracket.

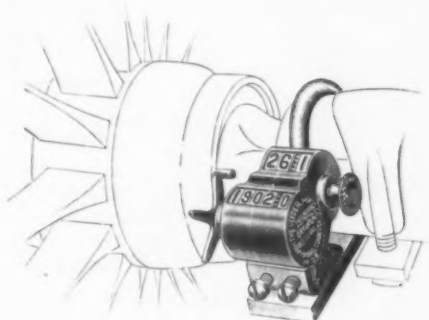
Brass and Iron Chain.

Electric Chain Company, Attleboro, Mass., who manufacture small chain for jewelers' use, have recently extended their line and are finding a market for some of their product among manufacturers. They are producing brass and iron chain by machinery from wire of from 21-1000 to 57-1000 gauge. This chain is produced by special machinery under a new process and it is claimed to be the strongest unsoldered wire chain made. They have a variety of styles and are prepared to make special chain to order.

Veeder Automobile Trip Odometer.

The Veeder Mfg. Company, Hartford, Conn., manufacturers, among other things, of cyclometers, odometers and counters, have recently put on the market an automobile trip odometer, as here illustrated. This device virtually combines the functions of two distance recorders placed side by side. One of them registers up to 10,000 miles, recording the total miles traveled, and repeats. The trip portion is operated from the same mechanism as the total and registers to 100 miles

and repeats, but can at any time be set back to zero, thus enabling the individual to determine at a glance the daily or hourly mileage or the distance from one town or city to another, while the aggregate distance traveled is always seen on the part recording the total. This odometer is especially suitable for automobiles, as the trip section is almost indispensable for measuring the amount of water, fuel or power consumed. The right hand row of figures record tenths of a mile, the second row miles and the third or left line of figures tens of miles, and so on. The company are now prepared to supply promptly odometers with suitable at-



Veeder Automobile Trip Odometer.

taching fixtures for 18 of the leading makes of automobiles, and upon application and receipt of blue print showing hub and axle will quote price for special fixtures required for any make of automobile manufactured.

Winchester Breech Loading Cannon.

The illustration herewith represents a saluting cannon made by the Winchester Repeating Arms Company, New Haven, Conn., and 312 Broadway, New York. It is offered to meet a demand for a low priced breech loading cannon for Fourth of July and other celebrations and saluting of a general character, at the same time possessing the indispensable qualities of safety, simplicity of construction and ease of manipula-



Winchester Breech Loading Saluting Cannon.

tion. It is made in one gauge, No. 10, of 12-inch rolled steel, cylinder bored, blued barrel, cast iron frame, weighs 14 pounds and lists \$7. In it can be used either paper or brass shells, and the company recommend their 10-gauge Winchester shells loaded with 10 drams of black powder, with two black edge and one card wad, to produce the loudest report. There are two heavy wheels at the forward end 3½ inches in diameter. The barrel and breech closure, it is stated, are proved and tested to withstand a much greater pressure than can be developed by any charge of black powder that can be loaded in a 10-gauge shell. The carriage and wheels are finely japanned, barrel blued and breech closure hardened black, giving a neat appearance. The cannon is 17 inches long over all, 7¼ inches high and 7 inches extreme width.

Neverslip Cover.

The Neverslip Tin Cover Company, Watertown, N. Y., are manufacturing the Neverslip tin covers for kettles and saucepans, as here shown. Fig. 1 illustrates the

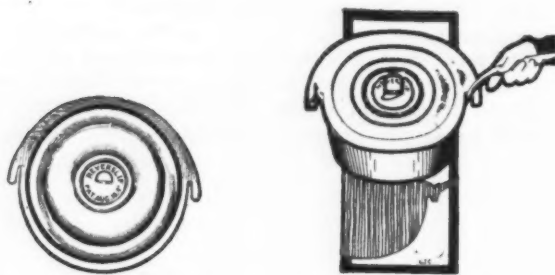


Fig. 1.—Neverslip Tin Cover.

Fig. 2.—Method of Using on Saucepan.

cover as put on the market. Fig. 2 represents it in position on a saucepan, Fig. 3 being another application of it to a kettle. The purpose of this form of cover is to enable the housekeeper to drain a kettle or saucepan without risk of injury from scalding water or steam.

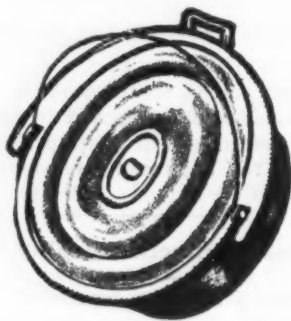
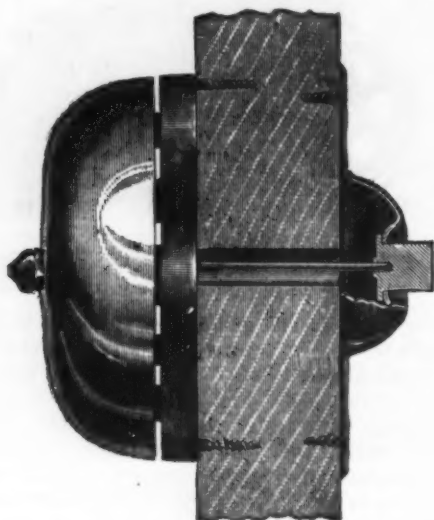


Fig. 3.—As Used on Kettle.

The cover is so made that the ears on the sides of the cover slip under the ears of kettle or saucepan, thus keeping it in proper position when pouring off hot water.

Duplex Push Button Door Bell.

The Builders' Supply Company, Indianapolis, Ind., are manufacturing the Duplex push button door bell, here illustrated. This bell requires no winding, and



Duplex Push Button Door Bell.

is packed with 4-inch steel, nickel plated gong. The size of the escutcheon is $2\frac{1}{2} \times 4$ inches. It can be supplied in the following finishes on wrought steel: Plain, bronzed and polished, and antique copper.

I X L Anti-Rattler.

The Launder, Harter & Harsh Mfg. Company, Wabash, Ind., are manufacturing the I X L anti-rattler, which is herewith illustrated. This device is easily put

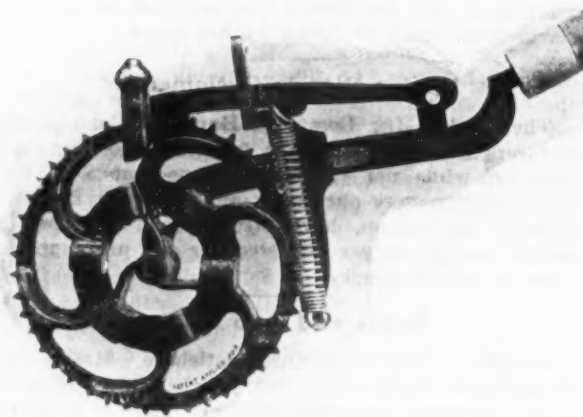


I X L Anti-Rattler.

in place and is guaranteed by the company to stop any rattle of the pole or shafts. It is strongly made of spring steel.

Toy Shooting Machine.

J. F. Berner, 515 William street, Buffalo, N. Y., as sole agent for the United States, is putting on the market the toy shooting machine shown herewith. The machine is referred to as absolutely harmless and just the thing for celebrating the Fourth of July. The device is equipped with a handle and is intended to be run on sidewalk or other surface, the turning of the wheel causing the discharge of the cartridges. It is referred to as simple in construction and giving loud reports. The directions for using the machine are as follows: Turn the cartridge protector to the left. To clear chamber, pull hammer half way up on flange. Put cartridge in that chamber, then let hammer slide back onto car-



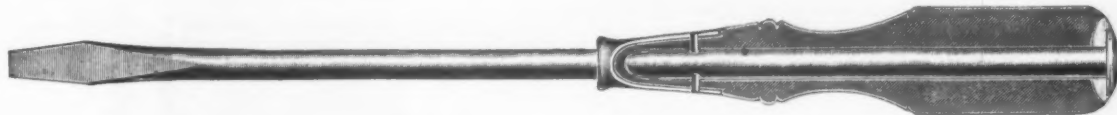
Toy Shooting Machine.

tridge. Lay wheel flat on the hand, then put cartridges in all the chambers, turn cartridge protector to the right and the machine is ready for action by running it slowly on a floor or sidewalk. To empty the chambers turn protector to the left and empty shells will drop out. When not shooting leave empty shells in. The shooting machine is made in two sizes, No. 6 shooting six times with one loading and No. 12 shooting 12 times with one loading. The .22 blank cartridge is used. The device was patented on March 4, 1902.

Nelson S. Haskell, Lynn, Mass., dealer in Hardware, Paints, Oils, &c., has moved to a new store at 144 Union street, which has been specially fitted up for the business.

Hurwood Screw Driver.

The Acme Mfg. Company, Plantsville, Conn., have put on the market the Hurwood screw driver, as here shown. The sectional view shows the interior construction of the tool, and that if a hammer is used on it the full force of the blow is carried to the work and does not ruin the tool. Although screw drivers are not made for such use, it is a fact that many screw drivers are in-



Sectional View of Hurwood Screw Driver.

jured in this way. The steel extends from the point of the blade through the handle, and forms a top that will withstand rough usage. They are made in ten sizes from 2½ to 12 inches long, inclusive, and are especially recommended by the makers for machinists', plumbers', carpenters' and electricians' use. Each screw driver is warranted by the manufacturer for quality of steel and workmanship.

Improved Champion Germ Proof Water Filter

The Champion Safety Lock Company, Cleveland, Ohio, have brought out the Champion Germ Proof water filters, here illustrated. These filters—five in number—



Fig. 1.—Champion Germ Proof Water Filter.—Style C.

are designed for use in connection with faucets having either threaded or plain outlets. The filters are made of brass, nickel plated, the filtering medium being a



Fig. 2.—Style D Filter.

Tripoli natural stone tube, from the outer surface of which germs and arrested filth are easily removed. To remove the filtering tube for cleaning it is only necessary to give the bottom a half turn to the left, when the tube can be withdrawn, quickly cleaned, returned to

and locked in its proper place, and a water tight joint is automatically made by a simple and ingenious arrangement. Fig. 1 illustrates the style C filters, which have a special three-way faucet attachment for the delivery of either filtered or unfiltered water to be drawn without detaching the filter from its position on the faucet. Fig. 2 shows the small size D filters, for attaching directly to the lower end of the faucet. The advantage claimed by the manufacturers for this line of

Universal Ratchet Wrench.

The Universal Mfg. Company, 22 China street, Cleveland, Ohio, have put on the market the Universal ratchet wrench and drill, shown herewith. Fig. 1 illustrates the Universal ratchet wrench, one important feature of which is the ease with which it can be used on bolts,



Fig. 1.—Universal Ratchet Wrench.

nuts, lag, set and cap screws. It is especially useful for overhead work and in close places, requiring but 1 inch play to effectually operate it. It is reversible, can be adjusted readily to take nuts of any description from 0 to 2 inches diameter, and the interchangeable parts are highly finished and hardened. It is especially recommended by the makers for the use of engineers, bridge and car builders, structural workers, cable, electric and steam railway use, &c. Fig. 2 is the same tool

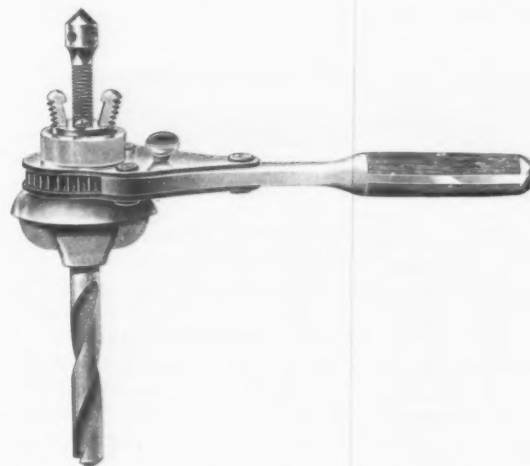


Fig. 2.—Universal Ratchet Wrench with Drill Socket and Feed Screw.

with drill socket and feed screw. The wrench is 12 inches long and can be furnished plain, as in Fig. 1, either plated or not plated, and in the same finishes in connection with the combination wrench and drill. Fig. 2. Wrenches for special purposes or of special dimensions will be furnished to order, also sockets for Morse taper shank drills.

B. L. Spofford, Wareham, Mass., has opened a store at 876 Main street, Coburn Block, and will deal in Hardware, Paints, Oils, Crockery, Tinware and Lamps.

Mr. Spofford has been connected with the Hardware trade for 12 years.

Cleaning Rod, Shell Extractor and Gun Sight.

Marble Safety Axe Company, Gladstone, Mich., have just put on the market several novelties for use in connection with rifles. One of them, Fig. 1, is a ball bearing steel cleaning rod. The rod is one piece of high grade spring steel, carefully straightened and tempered, and nicked over a plating of copper. The handle is of turned and checkered brass, nickel plated, fitted to the rod with a double set of ball bearings, one to receive the thrust and the other the pull of cleaning. Un-



Fig. 1.—Ball Bearing Steel Rifle Cleaning Rod.

derneath the screw cap at the end of the handle is a space filled with gun grease. On the inner side of the screw cap is a clip which holds a small cork to protect the muzzle of the gun when not in use. As the rod turns freely in the handle the cleaning patch follows the rifling, and cleans the gun much more effectively and easily than is possible with a rigid rod. The rod is fitted with a jagged or slotted end, as preferred.

Figs. 2 and 3 represent a novel device for extracting a broken shell in the breech of the rifle, which is known



Fig. 2.—Bergersen Broken Cartridge Shell Extractor.

as the Bergersen broken shell extractor. In the event of a defective shell remaining in the barrel, this device, Fig. 2, is slipped inside the broken section, which it grasps at the end, and with one jerk of the lever on the rifle removes both the extractor and the broken section. Fig. 3 is a view of the extractor after having removed the broken shell. As will be seen by the cuts, by slipping the instrument into the barrel the projection on one end springs into place, so that the shell is easily withdrawn.

Fig. 4 represents the Marble improved front gun sight. It has ivory tips and is said to be adaptable for



Fig. 3.—Showing Extractor and Shell After Removal.

any gun of any caliber, and it is also claimed that it is just as valuable with big bores as with small ones. It is intended as an aid to quick and accurate shooting at all ranges. With this sight it is claimed the marksman can adapt his aim to various ranges without elevating rear sight, and that on a range somewhat longer than the gun is sighted for one can see the object directly under the center of bead as well as over. This is a contrast to the old style stem supporting the bead, which,

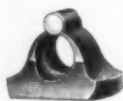
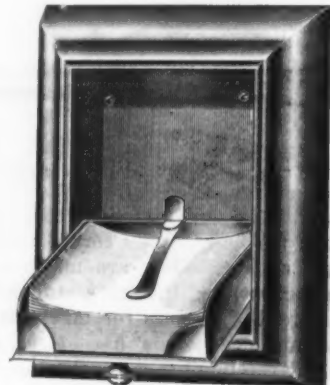


Fig. 4.—Marble Front Gun Sight.

extending directly down from it, as in most front sights, covers considerable space at a range from 100 to 300 yards. The use of this sight is intended to obviate such objectionable feature. It is made with 3-32 or $\frac{1}{8}$ inch beads, as preferred, with a choice of ivory, German silver or aluminum at the same price.

Enclosed Toilet Paper Holder.

The Searls Mfg. Company, Newark, N. J., whose New York representative is Frederic Klages, 127 Duane street, have added to their comprehensive line of bathroom and household specialties in nicked brass the Enclosed toilet paper holder, here illustrated, patent on which has been applied for. The important feature of



Enclosed Toilet Paper Holder.

this construction is that except when in use the toilet paper or interior is not seen, making the handsome exterior in keeping with the other attractive appointments of modern bathrooms. The holder is held in position on the wall by means of two inside oval head screws, seen in the illustration. The tray for the paper, taking sheets up to 5 x 7 inches, is pivoted near the bottom on each side, so that by a slight pressure on the front knob it can be either opened or shut, the sheets being kept in position by a flat spring, as shown. The holder is $8\frac{3}{4}$ x $10\frac{1}{2}$ inches over all, extends from the wall outward $2\frac{1}{2}$ inches, and is finely polished and nicked.

New .32 Caliber Rifle Bullet.

Ideal Mfg. Company, New Haven, Conn., have just put on the market a new bullet, as here illustrated, designed especially for the new .32 caliber Winchester special rifle and the new Marlin high pressure smokeless rifle. The bullet here illustrated, known as No. 321,232, was designed by the company especially for these rifles when reloading with low pressure smokeless or black powders. It has five grooves instead of four, the extra groove being in front; the forward por-



New .32 Caliber Rifle Bullet.

tion beyond this groove is a trifle below the bore of the rifling and is therefore not brought into contact with the barrel. The lubrication in the first groove is first to come into contact with the barrel; the sharp edge of the front band acts as a dirt scraper and the groove as a catcher and holder of the residuum, all of which is favorable to the prevention of leading the barrel. Another feature is the strong, broad base band, which helps to prevent gas cutting.

The manufacturers also call attention to the fact that the bullet is large enough to be sized down to .321, making it especially desirable for the 32-40 Marlin, Winchester, Remington and Stevens rifles that are worn a trifle large. Samples of this bullet will be mailed to those who request it, and it should be designated in ordering as No. 321,232.

Current Hardware Prices.

REVISED MARCH 25, 1902.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33½@33¾@10% signifies that the price of the goods in question ranges from 33½ per cent. discount to 33¾ and 10 per cent. discount.

Cut Prices.—In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 4, 1901), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, ½ doz. \$3.00. 33½@33¾@10%
North's.....10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....25&5%
Taplin's Perfection.....3%

Ammunition—See Cartridges, Shells, &c.

Anvils—American—

Am. and Hammer, Wrought \$18.00@24.00
Am. Patent Trenton.....\$18.00@24.00
Eagle Anvils.....\$18.00@24.00
Hay-Budden, Wrought.....\$18.00@24.00
Horseshoe brand, Wrought.....\$18.00@24.00

Imported—

Peter Wright's.....\$18.00@24.00

Anvil, Vise and Drill—

Millers Falls Co., \$18.00.....30%

Apple Parers—See Parers, Apple, &c.

Aprons, Blacksmiths'—

Hull Bros. Co.:
Lots of 1 doz.....25%
Smaller Lots.....20%
Lots of 3 doz.....30%

Augers and Bits—

Com. Double Spur.....70@70&10%
Boring Machine Augers.....70@70&10%
Car Bits, 12-in. twist.....60@60&10%
Jennings' Pattern

Auger Bits.....50&10&5@60%
Ford's Auger and Car Bits.....40&10%
Foster's Pat. Auger Bits.....25%
C. E. Jennings & Co.:

No. 10 ext. tip, R. Jennings' list.....40%
No. 30, R. Jennings' list.....50%
Russell Jennings.....25&10&5%
L'Hommedieu Car Bits 15&10@15&10&5%
Mayhew's Countersink Bits.....45%
Pugh's Black.....30%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....50&10%
Snell's Car Bits, 12-in. twist.....60%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

Standard List.....65@65&5%

Expansive Bits—

Clark's small, \$18; large, \$26.....50&10%
Lavigne's Clark's Pattern, No. 1, ½ doz., \$26; No. 2, \$18.....50&10%
C. E. Jennings & Co., Steer's Pat.....33&5%
Swan's.....60%

Gimlet Bits—

Common Double Cut, gro. \$2.25@2.75
German Pattern.....\$4.00@4.75

Hollow Augers—

Bonney Pattern, per doz. \$11.00@11.50
Ames.....25&10%
New Patent.....25&10%
Universal.....20%
Wood's Universal.....25%

Ship Augers and Bits—

Ford's.....40%
Saell's.....40%
C. E. Jennings & Co.:
L'Hommedieu's.....15&10%
Watrous'.....40%

Awl Hafts, See Hafts, Awl.

Awls—

Brad Awls:
Handled.....gro. \$2.75@3.10
Unhandled, Shouldered, gro. \$1.50@1.60
Unhandled, Patent.....gro. 60@70c
Peg Awls:
Unhandled, Patent.....gro. 31@34c
Unhandled, Shouldered, gro. 65@70c
Scratch Awls:
Handled, Common.....gro. \$3.50@4.00
Handled, Socket.....gro. \$1.50@1.60

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First Quality, factory brands.....\$6.00
First Quality, jobbers' brands.....\$5.75
Second Quality.....\$5.00@5.25

Axle Grease—See Grease, Axle.

Axles—

Concord, Loose Collar.....4½@5c
Concord, Solid Collar.....4½@5c
No. 1 Common.....3½@4c
No. 1 & 2 Com. New Style.....3½@4c
No. 2 Solid Collar.....4½@5c
Nos. 11 to 14.....70@70&10%
Nos. 15 to 18.....75@75&10%
Nos. 19 to 22.....75@75&10%

Boxes, Axle—

Common and Concord, not turned.....lb. 4½@5c
Common and Concord, turned.....lb. 4½@5c
Half Patent.....lb. 8@9c

Balances—Sash—

Caldwell new list.....50%
Pulman's.....60%

Spring—

Spring Balances.....50&10@60%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%
Perounce.....50%

Barb Wire—See Wire, Barb.

Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb. ¾@3c

Beams, Scale—

Scale Beams, List Jan. 12, '92, 40&10%
Chatillon's No. 1.....30%
Chatillon's No. 2.....40%

Beaters—Egg—

Standard Co.:
No. 6 Hip d.....\$1.00
No. 10 Dover Family Size.....\$1.00
No. 15 Dover Hotel Size.....\$1.50
Rival.....\$1.00

Taplin Mfg. Co.: No. 60 Improved Dover.....\$0.50 No. 75 Improved Dover.....\$0.50 No. 75-2 Imp'd Dover, Tin'd.....\$0.50 No. 100 Improved Dover.....\$0.50 No. 102 Improved Dover, Tin'd.....\$0.50 No. 150 Improved Dover, Hotel.....\$1.00 No. 152 Imp'd Dover, Hotel, T'd.....\$1.00 Lyon's Standard size.....\$0.75 Wonder (S. S. & Co.).....\$0.75

Bellows—

Blacksmith, Standard List 70@70&10%
C. E. Jennings & Co., Blacksmith.....45%
C. E. Jennings & Co., Hand.....33&5%

Blacksmiths—

Inch.....3 32 34 36 38 40
Euc.....\$3.50 3.75 4.25 4.80 5.35 6.15

Extra Length:

Each.....\$4.00 4.55 5.10 5.60 6.40 7.50

Molders—

Inch.....9 10 11 12 14 16
Doz.....\$6.75 7.25 8.50 9.50 12.00 14.50

Hand—

Inch.....6 7 8 9 10 12
Doz.....\$3.75 4.25 4.50 5.00 6.7 6.75

Bells—Cow—

Ordinary goods.....75&5@75&10%
High grade.....70@70&10%
Jersey.....75&10%
Texas Star.....50%

Door—

Abbe's Gong.....45%
Barton Gong.....55%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's.....40&40&10%
Yankee Gong.....35%

Hand—

Hand Bells, Polished.....60&5@60&10%
White Metal.....55@55&10%
Nickel Plated.....50@50&10%
Silver.....50@50&10%
Silver Clad.....50@50&10%

Miscellaneous—

Farm Bells.....lb. 2@2&4c
Steel Alloy Church and School.....50&10&5@60%

National Bell Foundry Co.: Superior Cast Steel Church and School.....50&10&5@60%

Belting—Rubber—

Agricultural (Low Grade).....75&10@80%
Common Standard.....75@75&10%
Standard.....70@70&10%
Extra.....60&10&5@60%
High Grade.....50&10@50&10&5%
Boston Belting Co.:
Seamless Stitched, Imperial.....45&5%
Boston.....50&5%
Niagara.....50&5%

Leather—

Extra Heavy, Short Lap.....50&10@60%

Regular Short Lap.....60@60&5%

Standard.....60&10@65&10%
Light Standard.....65@70%
Leather Lacing.....60&10%

Cotton—

Rossendale-Reidaway R. & H. Co.:
Sphinx Brand.....60&10%
Durable Brand.....70%

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters.....40&50%

Bicycle Goods—

John S. Long's Son's 1899 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—
See Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—Tackle—

Common Wooden.....70&10@75%
Cleveland; teal.....60&10@70%
Ford's Star Brand Self Lubricating.....60&10%
Hollow Steel, Ford's Pat. Star Brand.....50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Gal. Iron.....50&10%
See also Machines, Hoisting.

Boards Stove—

Zinc, Crystal, &c.....40@40&10%

Boils—

Carriage, Machine &c.—
Common, list Jan. 31, '95.....60&5@%
Norway Iron, \$3.00, list Oct. 7, '94.....80@80&5%
Phila. Eagle, \$3.00 list May 24, '99.....80@80&5%
Bolt Ends, list Jan. 30, '95.....70&5@%
Machine, list Oct. 1, '99.....65&5@%
Machine with C & T. Nuts.....65&7½@%
NOTE.—Jobbers are in many cases underselling the manufacturers.

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:
Inch.....\$ 4 5 6 8
Per doz.....\$0.26 .30 .39 .47 .55
Cast Iron Spring Foot:
Inch.....\$ 6 8 10
Per doz.....\$1.00 1.35 1.75
Cast Iron Chain, Flat, Japanned:
Inch.....\$ 6 8 10
Per doz.....\$0.75 1.05 1.30
Cast Iron Shutter, Brass Knobs:
Inch.....\$ 6 8 10
Per doz.....\$0.67 .80 1.00
Wrought Barrel Brass Knob:
Inch.....\$ 4 5 6 8
Per doz.....\$0.46 .50 .61 .70 1.28
Wrought Barrel.....70&10@75&5%
Wrought.....Bronzed, 10&5@50&10%
Wrought Flush, B. K., 50&10@60&10%
Wrought Square Neck.....50@50&10%
Wrought Slunk.....50@50&10%
Ives' Patent Door.....60%

Stove and Plow—

Plow.....60&5@%
Stove.....77½%

Tire—

Common.....77½%
Norway Iron.....80@80&5%
American Screw Company:
Norway Phila., list Oct. 16, '94.....82½%
Eagle Phila., list Oct. 16, '94.....84%
Bay State, list Dec. 28, '99.....77½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '94.....83½%
Eagle Phila., list Oct. 16, '94.....85%
Eclipse, list Dec. 28, '99.....77½%
Port Chester Bolt & Nut Company:
Empire, list Dec. 28, '99.....77½%
Keystone Phila., list Oct. '94.....85%
Norway Phila., list Oct. '94.....82½%
Unson Nut Co.:
Tire Bolts.....77½%

Borers, Tap—

Borers Tap, Ring, with Handle:
Inch.....1 1¼ 1½ 2
Per doz.....\$4.50 5.00 5.75 7.25

Inch.....2¼ 2½ 3
Per Doz.....\$8.65 11.50

Enterprise Mfg. Co., No. 1, \$1.25; No. 2, \$1.65; No. 3, \$2.50 each.....25¢

Boring Machines—See Machines, Boring.

Boxes, Mitre—

C. E. Jennings & Co.....40%
Seavey's, per doz., \$30.....40%

Braces—

NOTE.—Most Braces are sold at net prices.
Common Ball, American.....\$1.15@1.25
Barber's.....50&10&10@60&10%
Fray's Genuine Spofford.....40%
Fray's No. 70 to 120, 81 to 133, 207 to 414.....60%
C. E. Jennings & Co.....50&10%
Mayhew's Ratchet.....80%
Mayhew's Quick Action Hay Patent, 50%
P. S. & W. Co. Peck's Patent.....60&10@65&5%

Brackets—

Wrought Steel.....75&5@75&10%
Bradley's Wire Shelf:
Full cases.....80%
Broken cases.....75&10%
Griffin's Pressed Steel.....75%
Griffin's Folding Brackets.....70&10%

Bright Wire Goods—See Wire and Wire Goods.

Brollers—

Wire Goods Co.....75%

Buckets, Well and Fire—See Pails.

Bucks, Saw—

B. 48.....\$ gro. \$48.00
Hoosier.....\$ gro. \$36.00

Bull Rings—See Rings, Bull.

Butts—Brass—

Wrought list Sept., '95.....40@40&5%
Cast Brass, Floubot.....50%

Cast Iron—

Fast Joint, Broad.....50@50&10%
Fast Joint, Narrow.....50@50&10%
Loose Joint.....70&5@70&10%
Loose Pin.....70&5@70&10%
Mayer's Hinges.....70&5@70&10%
Parliament Butts.....70&5@70&10%

Wrought Steel—

Table and Back Flaps.....60%
Narrow and Broad.....60%
Inside Blind.....60&10%
Loose Pin.....60&10%
Loose Pin, Ball and Steeple.....60&10%
Tip.....75%
Japanned, Ball Tip Butts.....75%
Brazed Wrt. Nar. and Inside Blind Butts.....45&20@45&25%

Cages, Bird—

Hemirix, Brass:
3000, 5000, 1100 series.....54
1200 series.....33½%
200, 300, 600 and 900 series.....40&10%
Hemirix Bronze:
700, 800 series.....40&10%
Hemirix Enamelled.....40&10%

Calipers—See Compasses.

Calks, Toe and Heel—

Blunt, 1 prong.....per lb. 3¼@4c
Sharp, 1 prong.....per lb. 4c@4½c
Perkins' Blunt Toe.....\$ 3 3½ 4
Perkins' Sharp Toe.....\$ 4 5

Can Openers—See Openers, Can.

Cans, Milk—

Illinois Pattern, \$1.75 2.10 2.25 each.
Iowa Pattern.....2.40 2.60 each.
Buffalo Pattern.....2.30 2.50 each.
New York Pattern 3.00 3.25 3.40 each.
Baltimore Pattern 3.00 3.25 3.40 each.

Cans, Oil—

Buffalo Family Oil Cans:
3 5 8 10 gal.
\$4.00 60.00 108.00

Caps—Percussion—

Eley's E. B.....60c
G. D.....per M 33@34c
F. L.....per M 42@43c
G. E.....per M 47@50c
Muskel.....per M 62@63c

Primers—

Berdan Primers, \$1.00 per M.....54
B. L. Caps (Sturtevant Shell).....\$1.00 per M.....54
All other primers per M \$1.23@1.27

Carpet Stretchers—

See Stretchers, Carpet.

Gates, Molasses and Oil - Stebbins

80¢ 80¢ 10¢

Gauges - Marking, Mortise, etc.

Barrett's Comb. Roller Gauge 55¢ 10¢ 55¢ 10¢ 10¢
Stanley R. & L. Co.'s Butt & Rabbet Gauge 20¢ 20¢ 10¢ 10¢
Wire, Brown & Sharpe's 25¢
Wire, Morse's 25¢
Wire P. S. & W. Co. 30¢ 30¢ 10¢

Gimlets - Single Cut - Nail, Metal, Assorted, gro. \$1.50 @ 1.67

Spike, Metal, Assorted, gro. \$2.80 @ 3.25
Nail, Wood Handled, Assorted, gro. \$1.75 @ 2.00
Spike, Wood Handled, Assorted, gro. \$3.25 @ 3.50

Glass, American Window

Jobbers' List, Jan. 21, 1901. 90¢ 10¢
From store 90¢ 10¢
F. O. B. factory, carload lots: Single strength 90¢ 10¢ 7¢ Double strength 90¢ 10¢ 1¢

Glue - Liquid, Fish - List A, Bottles or Cans, with Brush.

37¢ 1/2 @ 50¢
List B, Cans (1/4 pts., pts., qts.) 33¢ 1/2 @ 18¢
List C, Cans (1/4 gal., gal.) 25¢ @ 15¢
International Glue Co. (Martin's) 4¢ 10¢ @ 5¢

Glue Pots - See Pots, Glue.

Grease, Axle - Common Grade, gro. \$5.00 @ 6.00

Dixon's Everlasting, 10 lb. pails, ea. 85¢
Dixon's Everlasting, in bxs. 2 doz. 1 1/2 \$1.20; 2 doz. \$2.00

Snow Flake: 1 qt. cans, per doz. \$2.00; 2 qts., \$3.20; 1 gal. cans per doz. \$6.00; 3 gal. \$16.00; 5 gal. \$24.00

Grindstones - Bicycle Emery Grinder, \$8.50

Bicycle Grindstones, each \$2.50 @ 3.00
Pike Mfg. Co.: Improved Family Grindstones, per inch, per doz. \$2.00 (33¢) Pike Mowse Knife and Tool Grinder, each \$8.00
Velox Ball Bearing, mounted, Angle Iron Frames, each \$3.25

Guards - Snow - Cleveland Wire Spring Co.: Galv. Steel 1000, \$9.00

Copper 1000, \$18.00

Gun Powder - See Powder.

Hack Saws - See Saws.

Hafts - Peg Patent, Leather Top, \$4.00 @ 5.25

Peg Patent, Plain Top, \$3.50 @ 4.75
Sewing, Brass Ferrule, \$1.50 @ 1.60
Saddlers', Brass Ferrule, \$1.35 @ 1.55
Peg, Common, \$1.25 @ 1.35
Brad, Common, \$1.50 @ 1.75

Halters and Ties - Covert Mfg. Co.: Web 45¢ 2¢

Jute Rope 45¢ 2¢
Sisal Rope 30¢ 2¢
Covert's Saddlery Works: Web and Leather Halters, 70¢
Jute and Manila Rope Halters, 70¢
Sisal Rope Halters, 60¢ 2¢
Jute, Manila and Cotton Rope Ties, 70¢
Sisal Rope Ties, 60¢ 2¢

Hammers - Handled Hammers - Heller's Machinists', 50¢ 50¢ 5¢

Heller's Farriers', 50¢ 50¢ 5¢
Magnetic Tack, Nos. 1, 2, 3, \$1.25, \$1.50, \$1.75
40¢ 40¢ 10¢ 10¢
Peck, Stow & Wilcox, 50¢ 10¢
Fayette R. Plumb: Plumb, A. E. Nail, 33¢ 45¢ 33¢ 10¢ 5¢ Engineers' and B. S. Hand 50¢ 10¢ 7¢ 50¢ 10¢ 10¢ 7¢
Machinists' Hammers, 50¢ 10¢ 50¢ 10¢ 10¢
Riveting and Tinner's, 40¢ 7¢ 40¢ 10¢ 7¢
Sargent's C. S. New List, 45¢
Heavy Hammers and Sledges: 1 lb. and under, 1 lb. 45¢ 75¢ 10¢ 5¢ 5¢ 10¢ 5¢ 10¢ 5¢
Over 5 lb., 1 lb. 30¢ @ .75
Wilkinson's Smith's, 34¢ 10¢ 10¢

Handcuffs and Leg Irs - See Police Goods

Handles - Agricultural Tool Handles - Axe, Pick, etc., 60¢ 10¢ 10¢

Hoe Rake, Fork, etc., 60¢ 10¢ 10¢
Shovel, etc., Wood 10¢ 10¢ 10¢
Cross-Cut Saw Handles - Atkins', 40¢ 5¢
Champion, 45¢ 10¢ 10¢
Dixon's, 50¢
Mechanics' Tool Handles - Auger, assorted, gro. \$2.30 @ 2.50
Bradawl, gro. \$1.25 @ 1.50
Chisel Handles: Apple Tanged Firmer, gro. ass'd, \$2.25 @ 2.55; large, \$2.50 @ 2.60
Hickory Tanged Firmer, gro. ass'd, \$1.75 @ 2.20; large, \$3.50 @ 3.70
Apple Socket Firmer, gro. ass'd, \$1.70 @ 1.85; large, \$3.00 @ 3.25
Hickory Socket Firmer, gro. ass'd, \$1.60 @ 1.75; large, \$1.75 @ 2.00
Hickory Socket Framing, gro. ass'd, \$2.50 @ 2.75; large, \$2.65 @ 2.85
File, assorted, gro. \$1.00 @ 1.15
Hammer, Hatchet, Axe, etc., 60¢
Hand Saw, Varished, doz. 70¢ 75¢
Not Varished, 55¢ 60¢
Plane Handles: Jack doz. 25¢; Jack Bolted, 55¢ 60¢
Fore, doz. 35¢; Fore, Bolted, 70¢ 75¢
Nicholson Simplicity File Handle, gro. \$0.85 @ 1.50

Hangers - Barn Door, New England Pattern, Check Back, Regular: Inch 3 4 5 6 8

Doz. \$1.30 1.75 2.50 3.00

Barn Door, New England Pattern, Check Back, Regular: Inch 3 4 5 6 8

Doz. \$1.30 1.75 2.50 3.00

Chicago Spring Butt Co.: Friction, 25¢

Oscillating, 25¢
Big Twin, 25¢
Chisholm & Moore Mfg. Co.: Baggage Car Door, 50¢
Elevator, 40¢
Railroad, 55¢
Columbian Hdw. Co.: American Trackless, 33 1/2¢ 10¢
Cronk Hanger Co.: Roller Bearing, 60¢ 10¢
Lane Bros.: Parlor Ball Bearing, \$4.00
Parlor, Standard, \$3.25
Parlor, New Model, \$3.75
Parlor, New Champion, \$2.25
Barn Door, Standard, 60¢ 10¢
Covered, 50¢ 10¢ 10¢ 5¢
Lawrence Bros.: Advance, 60¢
Cleveland, 70¢
Crown, 60¢
New York, 60¢
Steelless, 60¢ 10¢
Sterling, 60¢
McKinney Mfg. Co.: No. 1, Special, \$15, 60¢ 10¢
No. 2, Standard, \$18, 60¢ 10¢
Myers' Station Hangers and Track, 50¢ 10¢ (net)

Stowell Mfg. and Foundry Co.: Aene Parlor Ball Bearing, 40¢

Atlas, 60¢
Badger Barn Door, 50¢
Baggage Car Door, 50¢
Climax Anti-Friction, 50¢
Elevator, 40¢
Express, 40¢
Interstate, 40¢
Lundy Parlor Door, 50¢
Maxie, 50¢
Matchless, 60¢
Nansen, 60¢ 10¢
Railroad, 50¢
Street Car Door, 50¢
Steel, Nos. 300, 404, 500, 40¢ 5¢
Stowell Parlor Door, 50¢
Wild West, Nos. 30, 40, 50, 5¢
Zenith for Wood Track, 50¢
Taylor & Boggs Foundry Co.: Kidder's, 50¢ 15¢ 10¢ 5¢
Wilcox Mfg. Co.: Bike Roller Bearing, 60¢ 10¢
C. J. Roller Bearing, 60¢ 10¢
Cycle Ball Bearing, 50¢
Dwarf Ball Bearing, 40¢
Ives, Wood Track, 60¢ 10¢
L. T. Roller Bearing, 60¢ 10¢ 5¢
New Era Roller Bearing, 50¢ 10¢
O. J. Roller Bearing, 60¢ 10¢ 5¢
Prindle, Wood Track, 60¢
Richards' Wood Track, 60¢
Richards' Steel Track, 50¢ 10¢
Spencer Roller Bearing, 60¢ 10¢
Tandem Nos. 1 and 2, 60¢
Underwriters' Roller Bearing, 40¢
Velvet, 50¢
Wilcox Auditorium Ball Bearing, 30¢
Wilcox Barn Trolley No. 123, 40¢
Wilcox Elevator Door Hangers, Nos. 112 and 123 1/2, 50¢
Wilcox Elevator Door Hangers, No. 132, 40¢
Wilcox Fire Trolley, Roller Bearing, 30¢
Wilcox Le Roy Noiseless Ball Bearing, 40¢
Wilcox New Century, 50¢ 10¢ 10¢
Wilcox O. K. Steel Track, 50¢
Wilcox O. K. Trolley, 50¢
Wilcox Trolley Ball Bearing, 40¢
Wilcox Wideman Narrow Gauge, 40¢
Ball Bearing, 40¢

Harness Menders - See Menders.

Harness Snaps - See Snaps.

Hatches - Best Brands, 50¢ 50¢ 10¢

Cheaper Brands, 60¢ 60¢ 10¢
Note - Net prices often made.

Hay and Straw Knives - See Knives.

Hinges - Blind and Shutter Hinges - Surface Gravity Locking Blind: (Victor; National; 1888; O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No. 1 1 1/2 3 5
Doz. pair \$0.75 1.45 2.30
Mortise Shutter: (L. & P., O. S., Dixie, etc.) No. 1 1 1/2 3 5
Doz. pair \$0.60 .55 .53 .45
Mortise Reversible Shutter, (Buffalo, etc.) No. 1 1 1/2 3 5
Doz. pair \$0.65 .60 .55 .53

North's Automatic Blind Fixtures, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50

Parker, 70¢ 75¢
Reading's Gravity, 70¢ 10¢
Sargent's, Nos. 1, 3, 5, 11 & 13, 70¢ 10¢ 70¢ 20¢

Stanley's Steel Gravity Blind Hinges, 70¢ 10¢

7 doz. sets, without screws, \$0.80; with screws, \$1.15.
Wrightsville Hdw. Co.: O. S. Lull & Porter, 80¢ 34¢
Acme, Lull & Porter, 75¢ 10¢
Queen City Reversible, 75¢ 10¢
Stenger's Positive Locking, Nos. 1 & 2, 70¢ 10¢ 5¢
Shepard's Noiseless, Nos. 60, 65, 55, 70¢ 10¢
Niagara, Gravity Locking, Nos. 1, 3 & 5, 75¢ 74¢
138, Old Pat'n. Nos. 1, 3 & 5, 75¢ 74¢
Tip Pat'n. Nos. 1, 3 & 5, 75¢ 74¢
Buffalo Gravity Locking, Nos. 1, 3 & 5, 75¢ 74¢
Shepard's Double Locking, Nos. 30 & 25, 70¢ 10¢
Champion Gravity Locking, Nos. 75, 75¢ 74¢
Steamboat Gravity Locking, No. 10, 75¢ 74¢

Pioneer, Nos. 060, 45 & 5 1/4, 75¢ 74¢

Empire, Nos. 101 & 103, 70¢ 74¢
W. H. Co.'s mortise Gravity Locking, No. 2, 60¢ 10¢

Gate Hinges - Clark's or Shepard's - Doz. sets:

No. 1 1 1/2 3
Hinges with Latches, \$1.80 1.90 2.65
Hinges only, \$1.30 1.50 2.00
Latches only, .80 .60 .65

New England: With Latch, doz. \$1.55

Without Latch, doz. \$1.25
Reversible Self-Closing: With Latch, doz. \$1.90
Without Latch, doz. \$1.65

Western: With Latch, doz. \$1.50 @ 1.75

Without Latch, doz. \$0.95 @ 1.20
Wrightsville Hdw. Co.: Shepard's or Clark's, doz. sets, No. 1 2 3
Hinges with Latches, \$1.90 2.00 2.75
Hinges only, 1.30 1.50 2.00
Latches only, .65 .65 .70

Spring Hinges - Holdback, Cast Iron, gro. \$8.00 @ 9.00

Non-Holdback, Cast Iron, gro. \$7.00 @ 7.50

J. Bardsley Bardsley's Patent Cheeking, 15¢

Bommer Bros.: Bommer Ball Bearing Floor Hinges, 40¢
Bommer Spring Hinges, 40¢
Chicago Spring Butt Co.: Chicago, 25¢
Floor Hinge, 50¢
Garden City Engine House, 25¢
Keene's Saloon Door, 25¢
Triple End, 50¢
Columbian Hdw. Co.: Acme, Wrt. Steel, 30¢
Acme, Brass, 30¢
American, 30¢
Columbia, No. 14, 30¢
Columbia, No. 18, 30¢
Columbia, Adjustable, 30¢
Gem, new list, 25¢
Clover Leaf, 30¢
Oxford, new list, 35¢
Hoffman Hinge & Foundry Co.: No. 70 & 90 Holdback Detachable \$8.50
Lawson Mfg. Co.: Matchless, 35¢
Matchless Pivot, 45¢
Payson Mfg. Co.: Oblique, 50¢ 10¢
Stover Mfg. Co.: Ideal, No. 16, Detachable, 30¢
Ideal, No. 4, 30¢
New Idea, 30¢
New Idea, Double Acting, 45¢

Wrought Iron Hinges - Strap and T Hinges, etc., list Mar. 15, 1901:

Light Strap Hinges, 70¢
Heavy Strap Hinges, 75¢ 10¢
Light T Hinges, 65¢ 5¢
Heavy T Hinges, 60¢ 5¢
Extra Heavy T Hinges, 75¢
Hinge Hasps, 55¢
Cor. Heavy Strap, 75¢ 10¢
Cor. Ex. Heavy T, 75¢
Screw Hook, 1 1/2 to 20 in., 1 lb. 3 c
and Strap, 22 to 36 in., 1 lb. 2 1/2 c
Screw Hook and Eye: 3/4 to 1 inch, 1 lb. 5 c
1/2 inch, 1 lb. 6 c
3/8 inch, 1 lb. 7 c

Miscellaneous - Hoffman's Steel Spring Butt Hinges, 40¢ 10¢

Hoffman's Offset Refrigerator Hinges, 40¢ 10¢

Hods, Coal - 15 16 17 18 inch.

Galv. Open, \$2.70 3.00 3.30 3.60 3 doz.
Jap. Open, \$2.10 2.60 2.70 3.00 3 doz.
Galv. Funnel, \$3.30 3.60 3.90 4.20 3 doz.
Jap. Funnel, \$2.70 3.00 3.30 3.60 3 doz.

Hoes - Eye - Scovill and Oval Pattern, 60¢ 50¢ 10¢ 10¢ 5¢

Grub. list Feb. 23, 1899, 70¢ 70¢ 10¢
D. & H. Scovill, 60¢ 50¢ 10¢ 10¢ 5¢

Handled - Sept. 1, 1900, List:

Field and Garden, 75¢ 2¢
Ladies', Boys', Toy and Union, 70¢ 10¢ 10¢
Street and Mortar, 75¢ 74¢ 2¢
Cotton, 70¢ 10¢ 10¢ 5¢ 2¢
Planters', 70¢ 10¢
Weeding, 75¢
Note - Manufacturers and jobbers use a diversity of lists, and often sell at wet prices.
Ft. Madison Crucible Garden Hoe, 75¢ 2¢
Ft. Madison Crescent Cultivator Hoe, per doz., 75¢ 10¢ 2¢
Ft. Madison Mattock Hoes: Regular Weight, per doz. \$4.50
Junior Size, per doz. \$4.00
Ft. Madison Sprouting Hoe, per doz. \$4.80
Ft. Madison Dixie Tobacco Hoe, 75¢ 2¢
Kretzinger's Cut Easy, per doz., 75¢ 2¢
Warren Hoe, 75¢ 2¢
W. & C. Ivanhoe, 75¢ 2¢
B. B. Cultivator Hoe, 75¢ 10¢ 2¢
Acme Weeding, 75¢ 10¢ 2¢
W. & C. Lightning Shuffle Hoe, per doz., \$4.85

Hog Rings and Ringers - See Rings and Ringers.

Hoisting Apparatus - See Machines, Hoisting.

Hollow Ware - See Ware, Hollow.

Holders - Bit - Angular, per doz. \$24.00

Door, 45¢ 10¢
Empire, 50¢
C. E. Jennings & C. Model Pool Holders, 33¢ 4¢
Nicholson File Holders and File Handles, 33¢ 4¢

Hooks - Cast Iron - Bird Cage, Reading, 60¢

Bird Cage, Sargent's List, 60¢ 10¢ 80¢
Ceiling, Sargent's List, 40¢ 10¢
Clothes Line, Hoffman's, 40¢ 10¢
Clothes Line, Reading List, 65¢ 10¢ 65¢ 10¢ 10¢

Clothes Line, Sargent's List 5¢ 10¢ 10¢
Coat and Hat, Sargent's List, 45¢ 10¢
Clothes Line, Stowell's, 70¢
Coat and Hat, Stowell's, 70¢
Coat and Hat, Reading, 70¢ 75¢
Coat and Hat, Wrightsville, 65¢ 10¢
Harness, Reading List, 70¢ 10¢ 75¢

Wire - Belt, 80¢

Wire C. & H. Hooks, 60¢ 10¢ 60¢ 10¢ 5¢
Atlas, Coat and Hat, 45¢
10 Case Lots, 45¢ 10¢
Coat Harness, 50¢ 10¢ 5¢
Wire Coat and Hat, 50¢
Acme, 60¢
B. B., 60¢
V. Brace, Chief and Coar., 60¢
Gem, 60¢
Bright Wire Goods - See Wire.

Wrought Iron - Box, 6 in., per doz. \$1.50; 8 in., \$1.75;

10 in., \$2.00.
Cotton, doz. \$1.05 @ 1.25
Wrought staples, Hooks, etc., See Wrought Goods.

Miscellaneous - Bush, Light, doz. \$5.50; Medium, \$6.00; Heavy, \$6.50

Grass, Nos. 1 2 3 4 5
Best, \$1.50 1.75 2.00
Common, \$1.30 1.50 1.60
Potato and Manure, 70¢
Whiffletree, 1 lb. 3/4¢
Hooks and Eyes: Brass, 60¢ 10¢ 10¢ 70¢
Malleable Iron, 70¢ 5¢ 70¢ 10¢
Covert Saddlery Works' Self Locking Gate and Door Hook, 60¢
Brown Picture, 50¢ 10¢
Bench Hooks - See Bench Work.
Corn Hooks - See Knives, Corn.

Horse Nails - See Nails, Horse

Horsehoes - See Shoes, Horse.

Hose Rubber - Garden Hose, 3/4 inch:

Competition, ft. 1/4 @ 1/4¢
4-ply Standard, ft. 5 @ 6 c
4-ply Standard, ft. 8 @ 9 c
4-ply extra, ft. 9 @ 10 c
4-ply extra, ft. 11 @ 12 c
Cotton Garden, 3/4 in., coupled: Low Grade, ft. 6 @ 7 c
Fair quality, ft. 8 @ 9 c

Irons - Sad - From 1 to 10, 23¢ 3¢

B. B. Sad Irons, 1 lb. 34¢ 34¢
Chinese Laundry, 1 lb. 5¢ 5¢
Chinese Sad, 1 lb. 34¢ 34¢
Mrs. Potts', per set: Nos. 50 55 60 65
65¢ 70¢ 60¢ 65¢ 75¢ 80¢ 70¢ 75¢
New England Pressing, 1 lb. 34¢ 34¢

Soldering - Soldering Copper, 16¢ @ 17

2 lb., and up, 19¢ 20¢
Covert Mfg. Co., 20¢ 20¢
Smith & Hemenway Co's Sets, 70¢

Pinking - Pinking Irons, doz. 50¢ 60¢

Jack Screws - See Screws.

Jacks, Wagon - Covert Mfg. Co., Steel, 45¢ 2¢

Covert's Saddlery Works: Daisy, 60¢ 10¢
Violet, 60¢ 10¢
Lockport, 40¢ 40¢ 10¢
Lane's Steel, 33¢ 34¢

Knives - Brits, Spun, Plain, 30¢ @ 25¢

Enamelled and Cast Iron - See Ware, Hollow.

Knife Sharpeners - See Sharpeners, Knife.

Knives - Butcher, Shoe, &c. - Foster Bros' Butcher, &c., 30¢

Hartzell Cutlery Co., 30¢ 5¢
Smith & Hemenway Co., 40¢ 10¢
Hay and Straw - See Hay, Knives.

Corn - Ft. Madison Cut-Easy, per doz., \$3.35

Winthron Acme, per doz., \$2.85; Dent, \$2.75; adj. Serrated, \$2.20; Serrated, \$2.10; Yankee No. 1, \$1.50; Yankee No. 2, \$1.15.

Drawing - Standard List, 70¢ 5¢ 70¢ 10¢

Adjustable Handle, 35¢
Bradley's, 35¢
Castelo's Folding, 50¢ 50¢ 5¢
C. E. Jennings & Co. Nos. 45, 46, 40¢ 10¢
Jennings & Griffin, 60¢ 45¢
Swan's, 70¢ 10¢ 74¢
Watrous, 25¢
L. & L. J. White, 20¢ 5¢ 25¢

Hay and Straw - Lightning, per doz. \$5.00 @ 5.25

Iwan's Sickle Edge, per doz. \$1.00
Iwan's Serrated, per doz. \$1.00
Mame, per doz. \$8.50

Mincing - Buffalo, per gro. \$15.00

Miscellaneous - Farriers', doz. \$2.00 @ 3.00

Wootenholm's, per doz. \$3.00 @ 3.35

Knobs - Base, 2 1/2 inch, Birch, or Maple, \$1.30 @ 1.25

Rubber tip, gro. \$1.30 @ 1.25
Carriage, Jap. all sizes, gro. 30¢ 33¢
Door, Mineral, doz. 60¢ 55¢
Door, Por. Jap'd, doz. 65¢ 70¢
Door, Por. Nickel, doz. \$2.00 @ 2.10
Bardsley's Wood Door, Shutter, etc., 15¢
Picture, Sargent's, 60¢ 10¢

Lacing Leather - See Belting Leather.

Ladders Step Etc. - Goshen Mfg. Co.'s Step, etc., 50¢

Myers' Scales, Store Ladders, 50¢

Ladies- Melting-
L. & G. Mfg. Co. 25¢
P. S. & W. 50¢
Reading 60¢
Sargent's 40¢
Lanterns- Tubular-
Regular T. uoular doz. \$4.35 @ 4.75
Lift Tubular doz. \$4.75 @ 5.25
Hinge tubular doz. \$4.75 @ 5.25
Other styles doz. \$4.75 @ 5.25
Bull's Eye Police-
No. 1, 2 1/2 inch \$3.50
No. 2, 3 inch \$4.00
Latches, Thumb-
Ruggin's Latches doz. \$0.30 @ 0.35
Lawn Mowers-
See Mowers, Lawn.
Leaders- Cattle-
Small doz. 50¢; large, 55¢
Covert Mfg. Co. 45¢
Lemon Squeezers-
See Squeezers, Lemon.
Lifters, Transom-
Solid Grip, Rayson Mfg. Co. 80¢
Lines-
Wire Clothes, Nos. 18 19 20
100 feet \$1.80 1.70 1.80
75 feet \$1.80 1.70 1.80
Oseawan Mills
Crown Solid Braided Chalk 33¢
Mason's, No. 0 to No. 3 33¢
Samson Cordage Works
Solid Braided Chalk, No. 0 to 3 40¢
Silver Lake Braided Chalk, No. 0, \$0.00;
No. 1, \$0.50; No. 2, \$0.70; No. 3, \$0.70
No. 4, \$0.80
Locks- Cabinet-
Cabinet Locks 35¢ @ 39¢
Door Locks, Latches, &c.
[Net prices are very often made on
these goods.]
Reading Hardware Co. 50¢
R. & E. Mfg. Co. 50¢
Sargent & Co. 40¢
Elevator-
Stowell's 40¢
Padlocks-
Wrought Iron 7¢ @ 10¢ @ 50¢
R. & E. Mfg. Co. Wrt. Steel and Brass 50¢
Sash, &c.-
Fitch's:
Bronze and Brass 60¢
Iron 70¢
Ives' Patent:
Bronze and Brass 65¢
Iron 55¢
Wrought Bronze and Brass 55¢
Wrought Steel 50¢
Payson's signal 80¢
Reading 60¢ @ 10¢ @ 70¢
Machines- Boring-
Common, Upright, Without Augers, \$2.00
Common, Angular, Without Augers, \$2.25
Without Augers.
R. & E. Mfg. Co.: Upright.
Improved No. 3, \$4.35 No. 1, \$5.00
Improved No. 2, \$3.75 No. 2, \$3.38
Improved No. 5, 2.75
Jennings' 2.50 3.00
Mills' Falls 2.75
Snell's, Rice's Pat. 2.50
Swan's, No. 500 5.10 No. 900 6.45
Hoisting-
Moore's Anti-Friction Differential Pul-
ley Block 30¢
Moore's Hand Hoist, with Lock Brake, 30¢
Moore's Portable Pneumatic Hoist, 25¢
Ice Cutting-
Chandler's 15¢
Washing-
Wayne American doz. \$28.00
Western Star, No. 2 doz. 28.00
Western Star, No. 3 doz. 30.00
St. Louis, No. 41 doz. 60.00
Mallets-
Hickory 45¢ @ 50¢
Lignumvitae 45¢ @ 50¢
Tanners', Hickory and Applewood,
doz. 50¢ @ 55¢
Mats- Door-
Elastic Steel (W. G. Co.) 10¢
Mattocks-
See Picks and Mattocks.
Meat Cutters-
See Cutters, Meat.
Milk Cans- See Cans, Milk
Mills- Coffee-
Enterprise Mfg. Co. 25¢ @ 30¢
National, list Jan. 1, '94 30¢
Parker's Columbia and Victrola 30¢
Parker's Box and Slide 30¢ @ 10¢ @ 30¢
Swift, Lane Bros. 30¢
Mincing Knives-
See Knives, Mincing.
Molasses Gates-
See Gates, Molasses.
Money Drawers-
See Drawers, Money.
Mowers Lawn-
Net prices are generally quoted,
Cheap all sizes, \$1.90 @ 1.95
Good all sizes, \$2.25 @ 2.50
High Grade 4.25 4.50 4.75 5.00
Continental 60¢ @ 10¢ @ 5¢
Great American 70¢ @ 5¢
Great American Ball Bearing 60¢ @ 10¢ @ 5¢
Quaker City 70¢ @ 5¢
Pennsylvania 60¢ @ 10¢ @ 5¢
Pennsylvania Golf 50¢
Pennsylvania Horse 40¢
Pennsylvania Pony 45¢
Philadelphia:
Styles M., S., C., K., T. 70¢ @ 5¢
Style A, all Steel 60¢ @ 10¢
Style E, Low Wheel 60¢ @ 10¢
Style E, High Wheel 70¢ @ 10¢ @ 5¢
Drexel and Gold Coin, low list 50¢ @ 5¢
Nails-
Cut and Wire. See Trade Report.
Wire Nail and Brad, Pauper.
List July 30, 1899 85¢ @ 10¢ @ 5¢ @ 10¢
Hungarian, Finishing, Upholster-
ers, &c. See Tacks.

Horse-
Nos. 6 7 8 9 10
A. C. 25¢ 23¢ 22¢ 21¢ 21¢ 40¢ @ 25¢
Ausable 24¢ 24¢ 24¢ 24¢ 24¢ 50¢ @ 10¢
C. B. K. 25¢ 25¢ 22¢ 21¢ 21¢ 40¢
Champion 25¢ 25¢ 25¢ 24¢ 24¢ 40¢ @ 10¢ @ 5¢
Clinton 19¢ 17¢ 16¢ 15¢ 14¢ 30¢ @ 10¢ @ 5¢
Maud S. 25¢ 23¢ 22¢ 21¢ 21¢ 50¢
Putnam 23¢ 21¢ 20¢ 19¢ 18¢ 30¢ @ 5¢
Vulcan 23¢ 21¢ 20¢ 19¢ 18¢ 35¢ @ 10¢
American, Nos. 5 to 10 90¢ @ 5¢
Naponeset Nos. 5 to 10 10¢ @ 12¢
Jobbers' special brands per lb. 8¢ @ 9¢
Picture
1 1/2 2 2 1/2 3 3 1/2 in.
Brass Head, 45 50 70 95 100 gro.
Por. Head, 1.10 1.10 1.10 gro.
Nippers, See Pliers and Nippers.
Nut Crackers-
See Crackers, Nut.
Nuts-
Cold Punched: Off list.
Mfrs. or U. S. Standard.
Square, plain \$5.70 @ 4.80
Hexagon, plain \$4.90 @ 5.00
Square, C. T. & R. \$4.90 @ 5.00
Hexagon, C. T. & R. \$5.70 @ 5.40
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square Blank \$5.00 @ 5.10
Hexagon Blank \$5.30 @ 5.40
Square Tapped \$5.80 @ 5.90
Hexagon Tapped \$5.10 @ 5.20
Oakum-
Best or Government lb. 6¢
Navy lb. 5¢
U. S. Navy lb. 6¢
Plumbers' Spun Oakum 2¢
In carload lots 1/4 lb. off f.o.b. New
York.
Oil Axle-
Snow Flake:
1 pt. cans, per doz. \$3.00
1 qt. cans, per doz. \$4.80
1 gal. cans, per doz. \$15.00
5 gal. cans, per doz. \$60.00
Oil Tanks- See Tanks, Oil.
Oilers-
Brass and Copper 40¢ @ 10¢
Tin or Steel 60¢ @ 10¢
Zinc 60¢ @ 10¢
Paragon:
Brass and Copper 40¢ @ 10¢
Tin or Steel 60¢ @ 10¢
Zinc 60¢ @ 10¢
Malleable, Hammers Improved, No. 1,
\$3.60; No. 2, \$4; No. 3, \$4.40 per doz. 20¢
Malleable, Hammers Old Pattern,
same list 50¢ @ 10¢
Wilmut & Hobbs Mfg. Co. 70¢ @ 10¢
Spring Bottom Cans 70¢ @ 10¢
Railroad Oilers etc. 60¢ @ 10¢
Openers- Can-
French doz. 35¢
Iron Handle doz. 25¢ @ 27¢
Sprague, Iron Hdl. per doz. 35¢ @ 40¢
Sardine Scissors doz. \$1.75 @ \$5.00
Tip Top per doz. \$0.75
National, per gro. \$1.75 @ \$2.00
Stowell's per doz. 35¢ @ 45¢
Waldorf, per gro. \$3.85
Egg-
Nickel Plate per doz. \$2.25
Silver Plate per doz. \$3.50
Packing-
Asbestos Packing, Wick and Rope,
15¢ @ 15 1/2 lb.
Rubber-
Sheet, C. I. 8¢ @ 12¢
Sheet, C. U. S. 9¢ @ 15¢
Sheet, C. B. S. 10¢ @ 14¢
Sheet, Pure Gum 10¢ @ 70¢
Sh. of Red 35¢ @ 40¢
Jenkins' Standard, 7 1/2 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100
American Packing 7¢ @ 10¢ lb.
Cotton Packing 15¢ @ 10¢ lb.
Italian Packing 10¢ @ 12¢ lb.
Jute 3¢ @ 10¢ lb.
Russia Packing 10¢ @ 10¢ lb.
Pails- Creamery
S. & Co., with gauges. No 1 \$0.50;
No. 2, \$0.75 per doz.
Galvanized-
Price per doz.
Quart. 10 12 14
Water, Regular 1.75 2.00 2.25
Water, Heavy 3.40 3.60 3.80
Fire, Rd. Bottom. 2.25 2.50 3.00
Well 2.50 3.00
Pans- Dripping-
Standard List 60¢ @ 10¢ @ 50¢ @ 20¢
Fry-
Common Lipped:
No. 1 2 3 4 5
Per doz. \$0.90 .75 .85 .95 1.15
Roasting and Baking-
Regal, S. S. & Co. per doz. Nos. 5, \$4.50;
10 \$5.00; 20 \$5.50; 30 \$6.00;
Simplex, per gro. No. 40 \$30.00; 50,
\$34.50; 60 \$39.00; 140, \$35.00; 150,
\$37.50; 160, \$43.00.
Paper-Building Paper-
Asbestos: lb.
Building Felt 3¢
Mill Board, shet, 40 x 40 inches 4¢
Mill Board, roll, thicker than 1-16
inch 3¢
Mill Board, roll, 1-16 in. thick and
less 3¢
Rostin Sized Sheathing: 500 sq. ft.
Light wt., 20 lbs. to roll \$0.52
Medium wt., 30 lbs. to roll \$0.57
Heavy wt., 40 lbs. to roll \$0.63
Medium Grades Water Proof
Sheathing \$0.65 @ 1.25
Deafening Felt, 6, 6 and 1 1/2 sq. ft.
In lb., ton \$10.00 @ 12.00
Red Rope Roofing, 250 sq. feet per
roll \$1.65

NOTE-These goods are often sold at
delivered prices.
Tarred Paper.
1 ply (roll 300 sq. ft.), 10 in. \$23.00 @ 30.00
2 ply, roll 103 sq. ft. 40¢ @ 45¢
3 ply, roll 103 sq. ft. 60¢ @ 65¢
Slater's Felt (roll 500 sq. ft.) 50¢ @ 60¢
NOTE-Above prices often include de-
livery.
R. R. M. Stone Surfaced Roofing (roll
110 sq. ft.) \$3.75
Sand and Emery-
List Dec. 23, 1899 60¢ @ 60¢ @ 10¢
Parers- Apple-
Advance doz. \$4.50
Baldwin doz. \$5.00
Bonanza each \$5.00
Dandy each \$7.50
Eureka, 1898 doz. \$12.00
Family Bay State doz. \$4.00
Hudson's Little Star doz. \$5.50
Hudson's Rocking Table doz. \$27.00 @ 30.00
Improved Bay State per doz. \$27.00 @ 30.00
New Lightning doz. \$5.50
Reading 72 doz. \$4.00
Reading 78 doz. \$7.00
Turn T. B. Co. doz. \$5.50
White Mountain doz. \$4.00
Potato-
Saratoga doz. \$5.50
White Mountain doz. \$4.50
Paris Green-
Arsenic kegs or casks 11 1/2 @ 12 1/2
Kegs, 100 to 175 lbs. 12 @ 13 c
Kits, 14, 28, 56 lbs. 13 @ 14 c
Paper boxes, 2 to 5 lbs. 13 @ 14 c
Paper boxes, 1 lb. 13 @ 14 c
Paper boxes, 1/2 lb. 14 @ 15 c
Paper boxes, 1/4 lb. 15 @ 16 c
Picks and Mattocks-
List Feb. 23, 1899 70¢ @ 70¢ @ 10¢
Pigeons- Clay
Markle's Black Birds, f.o.b. factory,
per m. \$3.75
See also Traps, Target.
Pinking Irons-
See Irons, Pinking.
Pins- Escutcheon-
Brass 60¢ @ 60¢ @ 10¢
Iron, list Nov. 11, '85 60¢ @ 60¢ @ 10¢
Pipe, Cast Iron Soil-
Standard, 2-6 in. 60¢ @ 7 1/2
Extra Heavy, 2-6 in. 70¢
Fittings 75¢ @ 5¢
Pipe, Merchant, Boiler
Tubes, &c. Black Galva-
nized
1/2 to 1/4 inch 60¢ 48¢
3/4 to 10 inch 67¢ 55¢
Boiler Tubes. Up to
22 feet.
1 to 1 1/2 inch, inclusive 45¢
2 1/4 to 5 inch, inclusive 64¢
1 1/2 to 2 1/4 and 6 to 13 inches 58¢
Iron.
1 to 1 1/2 inch and 2 1/2 in. 45¢
1 1/2 to 2 1/4 inch 40¢
2 1/4 to 13 inch 50¢
Casing, Out Lengths. S. & S.
2 to 3 inch 61 1/2¢
3 1/4 to 4 inch 57 1/2¢
4 1/2 to 12 1/2 inch 59 1/2¢
Pipe Sewer-
Standard Pipe and Fittings, 2 to 2 1/2 in.
New England 70¢
New York and New Jersey 75¢
Maryland, Delaware, East Penn. 75¢
West Penn. and West Va. 75¢
Virginia 75¢
Ohio, Michigan and Ky. 85¢
Carload lots are generally delivered.
Planes and Plane Irons-
Wood Planes-
Molding 60¢ @ 2 1/2 @ 40¢ @ 10¢
Bench, First quality 45¢ @ 10¢ @ 10¢ @ 5¢
Bench, Second qual. 60¢ @ 10¢ @ 10¢ @ 5¢
Bailey's (Stanley R. & L. Co.) 25¢ @ 10¢ @ 25¢ @ 10¢ @ 35¢
Gage Self Setting 25¢ @ 10¢ @ 25¢ @ 10¢ @ 35¢
Iron Planes-
Bailey's (Stanley R. & L. Co.) 25¢ @ 10¢ @ 25¢ @ 10¢ @ 35¢
Chaplin's Iron Planes 60¢ @ 10¢
Miscellaneous Planes (Stanley R. & L.
Co.) 25¢ @ 10¢ @ 25¢ @ 10¢ @ 35¢
Sargent's 50¢ @ 10¢ @ 10¢
Plane Irons-
Wood Bench Plane Irons 30¢ @ 50¢ @ 30¢ @ 10¢ @ 5¢
Buck Bros. 30¢
Stanley R. & L. Co. 30¢ @ 10¢ @ 20¢ @ 10¢ @ 10¢
L. & J. White 20¢ @ 5¢ @ 25¢
Planters, Corn, Hand
Kohler's Eclipse per doz. \$9.00
Plates-
Felloe lb. 3 1/2 @ 4¢
Self-Sealing Pie Plates (S. S. & Co.), per
doz. \$2.00 50¢
Pliers and Nippers-
Button Pliers 70¢ @ 10¢ @ 75¢
Gas Burner, per doz., 5 in., \$1.15 @
\$1.20; 6 in., \$1.35 @ \$1.45
Gas Pipe, 7 8 10 12 in.
\$1.75 \$2.00 \$2.75 \$3.75
Acme Nippers 50¢ @ 50¢ @ 5¢
Bernard's:
Parallel Pliers, &c. 95¢
Paragon Pliers 50¢ @ 5¢
Lodi Pliers 50¢ @ 5¢
Elm City Fence Pliers 35¢
Cronk Hanger Co.:
American Button 75¢ @ 10¢
Cronk's 60¢
Improved Button 70¢ @ 10¢
Stub's Pattern 50¢
Combination and others 25¢
Heller's Farriers' Nippers, Pincers
and Tools 50¢ @ 50¢ @ 5¢
P., S. & W. Tanners' Cutting Nippers,
30¢ @ 30¢ @ 10¢
Swedish Slide, End and Diagonal Cut-
ting Pliers 40¢
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40¢
Plumbs and Levels-
Plumbs and Levels 75¢ @ 75¢ @ 10¢
Davis Iron, Machinist Nos. 1 to 14 30¢
Davis Iron, Adjustable N. 8 to 49 35¢
Disston's 70¢
Pocket Levels 73¢ @ 10¢ @ 75¢ @ 10¢

Stanley R. & L. Co. 10¢ @ 40¢ @ 10¢ @ 10¢
Stanley's Duplex 20¢ @ 20¢ @ 10¢ @ 10¢
Woods' Extension 35¢ @ 5¢
Poachers, Egg-
Buffalo Steam Egg Poachers, per doz.,
No. 1, \$7.30; No. 2, \$11.00 No. 3,
\$11.00; No. 4, \$14.50 50¢
Points, Glaziers-
Bulk and 1 lb. papers, lb. 8 c @ ..
1/2 lb. papers lb. 8 1/2 c @ ..
3/4 lb. papers lb. 9 c @ ..
Pokes, Animal-
Ft. Madison Hawkeye per doz. \$3.25
Ft. Madison Western per doz. \$3.75
Police Goods-
Manufacturers' Lists 35¢ @ 25¢ @ 5¢
Polish-Metal-
Prestoline Liquid, No. 1 (1/2 pt.), per doz.
\$3.00; No. 2 (1 qt.), \$9.75 40¢ @ 10¢
Prestoline Paste 40¢ @ 10¢
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, per
doz. 50¢; per gr. \$4.50; 1/2 lb. boxes, per
doz. \$1.25; 1 lb. boxes, per doz. \$2.25.
U. S. Liquid, 3 oz. cans, per doz. \$1.25;
per gr. \$12.00.
Barkeepers' Friend Metal Polish, per doz.
\$1.75; per gr. \$18.00.
Wynn's White Silk, 1/2 pt. cans, per
doz. \$2.00
Stove-
Black Eagle Benzine Paste, 5 lb. cans 10¢
Black Eagle, Liquid, 1/2 pt. cans 10¢
Black Jack Paste, 1/2 lb. cans, per gr. \$9.00
Ladd's Black Beauty, gr. \$10.00 50¢
Joseph Dixon's, per gr. \$5.75 10¢
Dixon's Plumbago per gr. \$2.50
Firestone per gr. \$2.50
Gem, per gr. \$4.50 10¢
Japanese per gr. \$3.50
Jet Black per gr. \$3.50
Peerless Iron Enamel, 1/2 pt. cans per doz. \$1.50
Wynn's:
Black Silk, 5 lb. pail each 70¢
Black Silk, 1/2 lb. box per doz. \$1.00
Black Silk, 5 oz. box per doz. \$0.75
Black Silk, 1/2 pt. liq. per doz. \$1.00
Poppers, Corn-
Round or Square:
1 qt. gro. \$7.00 @ \$7.50
1 1/2 qt. gro. 9 50¢ @ 10.00
2 qt. gro. 10 50¢ @ 11.00
**Post Hole and Tree Au-
ers and Diggers-**
See also Diggers, Post Hole, &c.
Potato Parers-
See Parers, Potato.
Pots- Glue-
Enameled 45¢
Tinned 40¢
Powder-
In Canisters:
Duck, 1 lb. each 45¢
Fine Sporting, 1 lb. each 75¢
Rifle, 1/2 lb. each 15¢
Rifle, 1 lb. each 25¢
In Kegs:
Duck, 6 1/2 lb. kegs \$2.25
Duck, 12 1/2 lb. kegs \$4.25
Duck, 25 lb. kegs \$5.00
Rifle, 6 1/2 lb. kegs \$1.25
Rifle, 12 1/2 lb. kegs \$2.25
Rifle, 25 lb. kegs \$4.00
King's Semi-Smokeless:
Keg (25 lb. bulk) \$0.50
Half Keg (12 1/2 lb. bulk) \$3.50
Quarter Keg (6 1/2 lb. bulk) \$1.90
Case 24 (1 lb. cans bulk) \$8.50
Half case (1 lb. cans bulk) \$4.50
King's Smokeless: Shot Gun
Keg (25 lb. bulk) \$12.00 \$15.00
Half Keg (12 1/2 lb. bulk) 6.25 7.75
Quarter Keg (6 1/2 lb. bulk) 3.25 4.00
Case 24 (1 lb. cans bulk), 14.00 17.00
Half case 12 (1 lb. cans bulk) 7.25 8.75
Presses- Fruit and Jelly-
Enterprise Mfg. Co. 30¢ @ 25¢
Seal Presses-
Morrill's No. 1, per doz. \$20.00 50¢
Morrill's No. 2, per doz. \$22.50 50¢
**Pruning Hooks and
Shears- See Shears.**
Pullers, Nail-
Cyclops 40¢ @ 40¢ @ 10¢
Miller's Falls, No. 3, per doz. \$12.00 15¢ @ 10¢
Pearson No. 1, Cyclone Spike Puller,
each \$30.00 50¢
Pelican, per doz. \$9.00 40¢ @ 10¢
Samson per doz. \$18.00
Seranton, Case Lots \$18.00
No. 1 (large), per doz. \$6.50; No. 2 (large),
\$5.75; No. 3 (small), \$5.00; No. 3-B (large),
\$5.50; No. 3-B (small), \$4.00; No. 2-D
(large), \$4.50; No. 3-D (small) \$4.00.
Smith & Hemenway Co.:
Diamond B. No. 2, case lots, per doz. \$8.00
Diamond B. No. 3, case lots, per doz. \$5.50
Giant, No. 1, per doz. \$18; No. 2, \$15.50;
No. 3, \$15 40¢
Pulleys-Single Wheel-
Inch 2 1/2 3
Awning, doz. \$0.45 70¢ .95
Inch 2 1/4 2 1/2
Hay Fork, Swivel or Solid Eye doz. \$1.35 @ 1.50
Hot House, doz. \$0.65 .90 1.20
Inch 1 1/4 1 1/2 1 3/4 2
Screw, doz. \$0.15 .20 .25 .30
Inch 1 3/4 2 2 1/4 2 1/2
Side, doz. \$0.30 .50 .55 .60
Inch 1 1/2 1 3/4 2 2 1/4
Tackle, doz. \$0.30 .45 .65 1.10
Stowell's:
Ceiling or End, Anti-Friction 60¢
Dumb Waiter, Anti-Friction, 60¢ @ 10¢
Hay Fork, Anti-Friction, 5-in. Wheel,
per doz. \$12.00 50¢
Electric Light 60¢
Slide, Anti-Friction 60¢ @ 10¢
Sash Pulleys-
Common Frame: Square or Round
End per doz., 1 1/4 in., 13c; 2 in., 16c
Auger Mortise, no Face Plate, per
doz. 1 1/4 in., 12c; 2 in., 15c.
Auger Mortise, with Face Plate, per
doz., 1 1/4 in., 13c; 2 in., 15 1/2 c.

Acme.....1 1/2 in., 16¢; 2 in., 10¢
Common Sense, 1 1/2 in., 1¢ doz. 15¢;
2 in., 20¢.
Fox-All-Steel, Nos. 3 and 7, 2 1/2 in., 10¢
No. 9, 1 1/2 in., 1¢ doz. 35¢
Extra for Plated Finish.....1¢ doz. 20¢
Extra for Anti-Friction.....1¢ doz. 10¢
Bushing.....1¢ doz. 10¢
Grand Rapids All Steel Noiseless.....40¢
Ideal No. 13.....1 1/2 in., 1¢ doz. 10¢
Niagara.....1 1/2 in., 16¢; 2 in., 10¢
No. 20, Troy.....1 1/2 in., 14¢; 2 in., 16¢
Star.....1 1/2 in., 16¢; 2 in., 10¢
Tackle Blocks—See Blocks.

Pumps—
Castern.....60¢ doz. 10¢
Pitcher Spout.....75¢ doz. 10¢
Wood.....50¢ doz. 10¢
Pump Leathers, Lower and Plunger
Valve—Per gro.:
Inch. 2 2 1/2 2 1/2 2 1/2
Inch. 3 3 1/2 3 1/2 3 1/2

Barnes Dbl. Acting (low list).....50¢
Flint & Walling's Fast Mail (low list).....50¢
Flint & Walling's Pitcher Spout.....75¢
Loud's Suction Pumps, U. S. Co., 20¢
Myer's Pumps, low list.....50¢
Myer's Power Pumps.....50¢
Myer's Spray Pumps.....50¢
Contractors' Rubber Diaphragm Non-
chokable, B. & L. Block Co., 30¢

Punches—
Revolving (1 tube).....doz. \$3.75 to \$4.25
Saddlers' or Drive, good.....doz. 65¢ to 70¢
Spring, single tube, good quality.....\$1.65 to \$1.75

Bemis & Call Co.'s Cast Steel Drive.....50¢
Bemis & Call Co.'s Check.....50¢
Bemis & Call Co.'s Spring.....50¢
Morrell's No. 1 (A. B. C.).....\$15.00
No. 2, 2 in. doz. \$22.50
No. 2, Metal, 2 in. doz. \$25.00
Bench Punch, each, \$4.00
Niagara Hollow Punches.....40¢
Niagara Solid Punches.....55¢ to 10¢
Steel Screw, H. & K. Mfg. Co., 40¢
Timners' Hollow, P. S. & W. Co., 35¢ to 55¢
Timners' Solid, P. S. & W. Co., 40¢
\$1.44.....60¢

Rail—Barn Door, &c.—
Cast Iron, Barn Door: Flange Screw
Holes for Rd. Groove Wheels:
1/2 3/4 1 in.
\$1.70 \$2.10 \$5.00 100 feet.

Angular for Sq. Groove Wheels:
Small, Med. Large.
\$1.60 1.95 2.70 100 feet.

Sliding Door, Brnz'd Wrt Iron, fl. 64¢
Sliding Door, Iron Painted.....2 1/2¢
Sliding Door, Wrought Brass, 1 1/2 in.
in.....lb. 36¢-30¢

Cronk's Double Braced Steel Rail, 1/2 in.
foot.....94¢
Cronk's O. N. T. Rail.....94¢
Lanes' O. N. T. 1 in. doz. \$2.50
Lanes' Standard, 100 ft. 3.75

Lawrence Bros. ft. 4 1/2
McKinney's None Better.....ft. 3 1/2
McKinney's Standard.....ft. 4
Stowell's Cast Rail.....1 1/2¢
Stowell's Steel Rail, Plain.....2 1/2¢
Stowell's Wrought Bracket, Plain.....94¢

Rakes
Net Prices, Malleable Rakes:
10 12 14 16-tooth
Shank.....\$1.50 1.60 1.75 1.85
Socet.....\$1.65 1.80 1.95 2.10

Sept. 1, 1900, List:
Malleable.....70¢ doz. 75¢
Lawn Rakes, Metal Head, per doz.
20 teeth.....\$3.25 to \$3.75
24 teeth.....\$3.50 to \$3.75

Fort Madison Red Head Lawn.....\$3.25
Fort Madison Blue Head Lawn.....\$3.00
Jackson Lawn, 20 and 30 teeth
per doz. \$4.00

Kohler's
Lawn Queen, 20-tooth, per doz.....\$3.80
Lawn Queen, 24-tooth, per doz.....\$3.75
Paragon, 20-tooth, per doz.....\$3.85
Paragon, 24-tooth, per doz.....\$3.00
Steel Garden, 14-tooth, per doz.....\$3.00
Malleable Garden, 14-tooth per doz. \$2.25

Rasps, Horse—
Diston's.....75¢
Heller Bros.....70¢ to 75¢
McCaffrey File Co. Horse Rasps, 60¢ to 75¢
New Nicholson Horse Rasp.....70¢ to 10¢
See also Files.

Razors—
Boracic.....70¢
Fox Razors, No. 43.....per doz. \$30.00
Fox Razors, No. 44.....per doz. \$24.00
Fox Razors, No. 53, Platina, per doz. \$24.00

Silberstein:
Carbo Magnetic.....\$18.00
Griffon, No. 35.....\$15.00
Griffon, No. 40.....\$12.00
All other Razors.....40¢
Safety Razors.....40¢

Razor Straps—
See Straps, Razor.

Reels—Fishing—
Hendryx Aluminum, German Silver,
Gold, Bronze, Silver, Rubber, Poplar
and Salmon, Single Action, Multi-
plying and Quadruple, all sizes.....25¢
Hendryx Single Action Series, 102P
and PN, 202P and PN, 102 PR and
PN, 202 PR and PN, 304 P and
PN, 0304P and PN, 502 and 502N,
502 and 502N, 0304N, Competitor, 50¢
Hendryx Multiplying and Quadruple
Series, 3004N and PN, 42P and PN,
3904N, 3904P and PN, 03904P, 03904N,
and 03904N, 5000N and PN.....40¢ to 10¢
Shakespeare, Style C.....25¢

Registers—
List Sept. 3, 1901.

Black Jap.....75¢ to 10¢
White Jap.....75¢ to 10¢
Bronzed.....75¢ to 10¢
Nickel Plated.....75¢ to 10¢
Electro Plated.....75¢ to 10¢

There is a good deal of irregularity in
prices of Registers, especially in Black
Japaned, and some jobbers and manu-
facturers are using the old list

Revolvers—

Single Action.....35¢ to 90¢
Double Action, except 44 calibers.....\$1.50
Double Action, 44 calibers.....\$1.65
Automatic.....\$1.10
Hammerless.....\$3.00
Riddles, Crain or Sand—
16 in. per doz.....\$2.00 to \$2.25
17 in. per doz.....\$2.25 to \$2.50
18 in. per doz.....\$2.50 to \$2.75

Rings and Rings—

Bull Rings—
Steel.....\$0.80 2 1/2 3 Inch.
Copper.....1.10 1.20 1.50 doz.
Hog Rings and Rings—
Hill's Rings.....gro. dozens, \$5.00 to \$5.50
Hill's Rings, Gray Iron, doz. 55¢ to 60¢
Hill's Rings, Mal. Iron, doz. 75¢ to 80¢
Blair's Rings.....per doz. \$5.00 to \$5.25
Blair's Rings.....per doz. \$5.00 to \$5.25
Brown's Rings.....per doz. \$6.00 to \$6.25
Brown's Rings.....per doz. \$1.00 to \$1.10
Rapid Rings.....per doz. \$3.50
Rapid Rings.....per doz. \$3.50

Rivets and Burrs—

Copper.....50¢ doz. 10¢ to 10¢
Iron or Steel.....70¢ doz. 10¢ to 10¢
Miscellaneous.....70¢ doz. 10¢ to 10¢

Rivet Sets—See Sets

Roasting and Baking

Pans—See Pans, Roasting and
Baking.

Rollers—

Acme Stowell's Anti-Friction.....50¢
Barn Door, Sargent's list.....50¢ to 10¢
Cronk's Stay.....60¢
Cronk's Brinkerhoff.....60¢
Lane's Stay.....39¢
Stowell's Barn Door Stay.....per doz. \$1.25

Rope—

Manila, 7-16 in. and larger,
tarred or untarred.....lb. 13¢ @
Manila.....3/4-inch.....lb. 10¢ @
Manila 1/4 & 5-16 in.....lb. 14¢ @
Manila Hay, Hide and
Bale Ropes Medium and
Coarse.....lb. 13¢ @ 13 1/2¢
Sisal, 7-16 in. and larger.....lb. 9 1/2¢ @ 10¢
Sisal.....3/4-inch.....lb. 10¢ @ 10 1/2¢
Sisal 1/4 and 5-16 in.....lb. 10 1/2¢ @ 11¢
Sisal, Hay, Hide and
Bale Ropes, Medium
and Coarse.....lb. 9 1/2¢ @ 10 1/2¢
Sisal, Tarred, Medium
Lath Yarn.....lb. 9¢ @ 9 1/2¢

Cotton Rope—

Best.....1/4-in. and larger lb. 13 1/2¢
Medium.....1/4-in. and larger lb. 11¢
Com.....1/4-in. and larger lb. 9¢
Jute Rope—
Thread No. 1, 1/4 in. and up lb. 6 1/2¢
Thread No. 2, 1/4 in. and up lb. 6¢
Yarn, 1/4 in. and up.....lb. 4 1/2¢

Wire Rope—

Galvanized.....25¢ to 7 1/2¢
Plain.....30¢ to 7 1/2¢
Ropes, Hammock—
Covert Mfg. Co.....45¢ to 50¢
Covert Saddlery Works.....80¢ to 85¢

Rules—

Hozwood.....60¢ to 10¢
Ivory.....35¢ to 10¢ to 10¢ to 10¢
Chaplin-Stephens Co.:
Boxwood.....60¢ to 10¢
Larkin's Steel.....95¢ to 10¢ to 10¢
Larkin's Lumber.....50¢ to 10¢
Stanley R. & L. Co.:
Boxwood.....60¢ to 10¢
Ivory.....35¢ to 10¢ to 10¢
Upson Nut Co.:
Boxwood.....60¢ to 10¢
Ivory.....35¢ to 10¢ to 10¢

Sand Irons—See Irons, Sand.

Sand and Emery Paper and Cloth—

See Paper and Cloth.

Sash Cords—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—

See Weights, Sash.

Sausage Stuffers or Fillers—

See Stuffers or Fillers.

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Saws—

Acorns:
Circular.....50¢ to 50¢ to 10¢
Band.....50¢ to 10¢ to 10¢
Cross Cuts.....35¢ to 5¢
Mulay, Mill and Drag.....50¢ to 10¢
Wood Saws.....40¢
Hand, Compass, &c.....40¢
Diston's:
Circular Solid and Inserted Tooth, 50¢
Band 2 to 14 in. wide.....60¢
Band 14 to 14.....70¢
Crosscuts.....45¢ to 10¢
Narrow Crosscuts.....50¢ to 10¢
Mulay, Mill and Drag.....50¢
Framed Woodsaws.....35¢ to 7 1/2¢
Woodsaw Blades.....40¢ to 7 1/2¢
Woodsaw Rods.....25¢
Hand Saws, Nos. 19, 99, 9, 16, d100,
D8, 120, 79, 77, 8.....25¢ to 7 1/2¢
Hand Saws, Nos. 7, 107, 107 1/2, 3, 1,
0, 00, Combination.....30¢ to 7 1/2¢
Compass, Keyhole, &c.....25¢ to 7 1/2¢
Butcher Saws and Blades.....35¢ to 7 1/2¢
C. E. Jennings & Co.'s:
Back Saws.....35¢
Butcher Saws.....35¢
Compass and Key Hole Saws.....25¢
Framed Wood Saws.....40¢
Hand Saws.....25¢ to 30¢
Wood Saw Blades.....45¢
Peace:
Circular and Mill.....50¢
Cross Cuts, list Jan. 1, '00.....50¢
Hand Panel and Rip.....30¢
Richardson:
Circular and Mill.....50¢

Hand &c.....30¢
X Cuts, list Jan. 1, '00.....50¢
Simonds:
Circular Saws.....50¢
Crescent Ground Cross Cut Saws.....35¢
One-Man Cross Cuts.....40¢ to 10¢
Gang Mill, Mulay and Drag Saws.....50¢
Hand Saws.....25¢ to 7 1/2¢
Back Saws.....35¢ to 7 1/2¢
Butcher Saws.....35¢ to 7 1/2¢
Hand Saws.....25¢ to 7 1/2¢
Compass, Keyhole, &c.....25¢ to 7 1/2¢
Wood Saws.....35¢ to 7 1/2¢

Hack Saws—

Diston:
Concave Blades.....25¢
Keystone.....30¢
Hack Saw Frames.....30¢
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180,
330.....40¢
Hack Saws, Nos. 175, 180, 330, com-
plete.....40¢
Griffin's Hack Saw Frames.....45¢
Griffin's Hack Saw Blades.....45¢
Star Hack Saws and Blades.....15¢ to 10¢
Sterling Hack Saw Blades.....25¢
Sterling Hack Saw Frames.....20¢

Scroll—

Barnes' No. 7, \$15.....25¢
Barnes' Scroll Saw Blades.....40¢
Barnes' Velocipede Power Scroll Saw,
without boring attachment, \$18.....20¢
with boring attachment, \$30.....20¢
Lester, complete, \$10.00.....15¢ to 10¢
Rogers, complete, \$4.00.....15¢ to 10¢

Scale Beams—

See Beams, Scale.

Scales—

Family, Turnbull's.....\$0 to 30¢ to 10¢
Counter:
Hatch, Platform, 1/2 oz to 1 lb. doz. \$5.50
Two Platforms, 1/2 oz to 8 lbs. doz. \$16
Union Platform, Plain.....\$1.70 to \$1.90
Union Platform, Striped \$1.85 to \$2.15
Chattillon's:
Eureka.....25¢
Favorite.....40¢
Grocers' Trip Scales.....40¢
Pelouze Scales—Household, Counter,
Confectionery, Postal, Ice, &c.....20¢
"The Standard" Portables.....45¢
"The Standard" R. R. and Wagon.....50¢

Scrapers—

Box, 1 Handle.....doz. \$2.25 to \$2.50
Box, 2 Handle.....doz. \$2.75 to \$3.00
Ship, No. 1, doz. \$3.50; No. 2,
\$2.25 to \$2.40
Adjustable Box Scraper (S. R. & L. Co.)
\$3.00.....30¢ to 30¢ to 10¢

Screens, Window, and

Frames—
Bonanza Window Screens.....60¢ to 10¢
Cortland Victor Screens.....60¢ to 10¢
Flyer Pattern Window Screens.....60¢ to 10¢
Maine Window Screen Frames, 40¢ to 10¢
Perfection Window Screens.....60¢ to 10¢
Phillips' Window Screen Frames.....60¢ to 10¢
Porter's Hummer Window Screens.....60¢ to 10¢
Porter's Klondike Window Screens.....60¢ to 10¢
Wabash Spring Adj. Screen.....50¢
See also Doors.

Screw Drivers—

See Drivers, Screw.

Screws—Bench and Hand—

Bench, Iron, doz. 1 in., \$3.00 to \$3.25;
1 1/2, \$3.50 to \$3.75; 1 3/4, \$4.00 to \$4.50
Bench, Wood, Beech, doz. \$3.50 to \$3.75
Hand, Wood.....30¢ to 5¢ to 10¢
Hand, R. Bliss Mfg. Co.....35¢
Coach, Lag and Hand Rail—
Lag, Common Point, list Oct. 1,
'99.....75¢ to 10¢
Coach and Lag, Gimlet Point, list
Oct. 1, '99.....75¢ to 10¢
Hand Rail, list Jan. 1, '81, 60¢ to 10¢

Jack Screws—

Standard List.....75¢ to 75¢ to 10¢
Millers Falls.....50¢ to 10¢ to 10¢
Millers Falls, Roller.....50¢ to 10¢
P. S. & W.....50¢ to 50¢ to 10¢
Sargent.....70¢ to 10¢

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron, 50¢ to 50¢ to 10¢
Flat or Round Head, Brass, 50¢ to 50¢ to 10¢

Set and Cap—

Set (Iron or Steel).....70¢
Sq. Hd. Cap.....65¢
Hex. Hd. Cap.....65¢
Rd. or Flister Hd. Cap.....60¢

Wood—

List Jan. 1, 1900.
Manufacturers' printed discounts:
Flat Head, Iron.....87 1/2¢ to 90¢
Round Head, Iron.....85¢ to 87 1/2¢
Flat Head, Brass.....85¢ to 87 1/2¢
Round Head, Brass.....82 1/2¢ to 85¢
Flat Head, Bronze.....75¢ to 80¢
Round Head, Bronze.....72 1/2¢ to 77 1/2¢
Drive Screws.....87 1/2¢ to 90¢
NOTE.—Extra 5¢ to 10¢ often given.

Scroll Saws—See Saws, Scroll.

Scythes—

Clipper Pattern, Grass.....\$2.25
Full Polished Clipper.....\$2.75
Grain.....\$7.00
Clipper, Grain.....\$7.50
Wood and Bush.....\$4.50

Scythe Snaths—

See Snaths, Scythe.

Seeders—

Ralsin.....35¢ to 30¢
Enterprise.....35¢ to 30¢

Sets—Awl and Tool—

Brad Awl and Tool Sets:
Wood Hdl., 10 Awls doz. \$2.00 to \$2.25
Wood Hdl., 10 Awls, 6 Tools.....doz. \$3.50 to \$2.60
Alken's Sets, Awl and Tools:
No. 20, 7 doz. \$10.00.....50¢ to 10¢ to 10¢
Fray's Adj. Tool Hdl., Nos. 1, \$12; 2,
\$18; 3, \$12; 4, \$9; 5, \$7.....50¢
Millers Falls Adj. Tool Hdl., No. 1,
\$12; No. 4, \$12; No. 5, \$18.....15¢ to 10¢
Stanley's Excelsior:
No. 1, \$7.50; No. 2, \$4.00; No. 3,
\$5.50.....50¢ to 40¢ to 10¢ to 10¢

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe.....per doz. \$9.00

Nail—

Square.....per gro. \$3.50
Round, Bk. and Pol., assorted.....gro. \$1.80 to \$2.50
Octagon.....gro. \$4.25 to \$4.75
Knurled, Good.....gro. \$6.00 to \$6.50
Buck Brothers.....37 1/2¢
Cannon's Diamond Point, per gr. \$12.35
Clayton's.....per gro. \$2.00
Snell's Corrugated, Cup Pt. per gro. \$7.50
Snell's Knurled, Cup Pt. per gro. \$7.50

Rivet—

Regular list.....70¢ to 70¢ to 10¢ to 5¢

Saw—

Alken's:
Genuine.....per doz. \$5.50 to \$6.00
Imitation.....per doz. \$3.00 to \$3.10
Atkin's:
Criterion.....40¢
Adjustable.....40¢
Bemis & Call Co.'s:
Cross Cut.....30¢
Hammer, new Pat.....45¢
Plate Hammer.....30¢
Disston's Star and Monarch.....25¢
Morrell's No. 1, \$15.00.....50¢
Nos. 3 and 4, Cross Cut, \$20.65.....50¢
No. 5, Mill, \$30.00.....50¢
No. 10, 11, 9, \$15.65.....50¢
No. 1 Old Style, \$10.00.....50¢
Taintor Positive, per doz. \$18.....60¢

Sharpeners Knife—

Chicago Wheel & Mfg. Co.....65¢
Smith & Hemenway Co.....70¢ to 5¢
Tantle Mills, per gross, \$14.40.....35¢ to 39¢

Sharpeners Skate—

Eureka Skate Sharpener.....per doz. \$2.00

Shaves Spoke—

Iron.....doz. \$1.00 to \$1.25
Wood.....doz. \$1.75 to \$2.00
Bailey's (Stanley R. & L. Co.)
50¢ to 50¢ to 10¢ to 10¢
Goodell's, per doz. \$9.00.....15¢ to 10¢

Shears—

Cast Iron.....7 13 9 in.
Best.....\$16.00 13.00 20.00 gro.
Good.....\$13.00 15.00 17.00 gro.
Cheap.....\$5.00 6.00 7.00 gro.
Straight Trimmers, &c.:
Best quality, Jap.....70¢ to 70¢ to 10¢
Nickel.....60¢ to 60¢ to 10¢
Fair qual. Jap.....75¢ to 75¢ to 10¢
Nickel.....75¢ to 75¢ to 10¢
Tailors' Shears.....40¢ to 40¢ to 10¢
Acme Cast Shears.....40¢ to 40¢ to 10¢
Helmisch's Tailors' Shears.....40¢
Wilkinson's Hedge.....50¢
Wilkinson's Sheep.....1000 list, 50¢

Timners' Snips—

Steel Blades.....20¢ to 10¢
Steel Laid Blades.....50¢ to 10¢
Forged Handles, Steel Blades, Berlin
40¢ to 10¢ to 10¢
Jennings & Griffin Mfg. Co.'s, 7 to 10
inch.....50¢ to 50¢
Niagara Snips.....40¢
P. S. & W. Co.....20¢

Pruning Shears and Tools—

Cronk's Grape Shears.....35¢
Cronk's Pruning Shears.....35¢
Diston's Combined Pruning Hook
and Saw, per doz. \$18.00.....35¢ to 25¢ to 10¢
Diston's Pruning Hook, per doz. \$12.00
25¢ to 25¢ to 10¢
John T. Henry Mfg. Company:
Pruning Shears, all grades.....40¢ to 40¢ to 10¢
Orange Shears.....50¢ to 50¢ to 10¢
Grape.....40¢ to 10¢ to 10¢
Tree Pruners.....75¢
Nagley's Pruning Shears.....10¢ to 5¢
P. S. & W. Co.....39¢

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50¢
Patent Roller Hatfield's, Sargent's list
75¢ to 10¢ to 75¢
Reading.....75¢ to 10¢ to 75¢
R. & E. list.....33¢
Wrightville, Hatfield Pattern.....50¢

Sliding Shutter—

Reading list.....70¢ to 10¢ to 75¢
R. & E. list.....33¢
Sargent's list.....30¢ to 10¢ to 10¢

Shells—Shells, Empty—

First quality, all gauges.....60¢ to 5¢
Climax, Club, Rival, 10 and 12 gauge,
65¢ to 5¢

Paper Shells, Empty—

Acme, Ideal, Leader, New Rapid,
Magic, 10, 12, 16 and 30 gauge.....25¢ to 5¢
Blue Rival, New Climax, Challenge,
Monarch, Defiance, New Victor, Ro-
peater, Yellow Rival, 10, 12, 16 and
30 gauge.....40¢ to 10¢ to 10¢
10 and 12 gauge.....25¢
Climax, Union, League, New Rival,
14, 16 and 20 gauge (\$7.50 list), 20¢
Expert Metal Lined and Pigeon, 10,
12, 16 and 20 gauge.....33¢ to 5¢

Sieves and Sifters—
Hunter's Imitation, gro. \$11.00 @ 11.50
Buffalo Metallic Blue, S. S. & Co., # gr. 14 & 16 18 & 20 \$13.80 \$15.00
F. J. Meyers' Mfg. Co.:
Eclipse, # gr. \$11.00
Electric Light, # gr. \$11.00
Hunter's Genuine, # gr. \$12.50
No Name, Hunter's, # gr. \$11.00
Standard, # gr. \$11.00
Shaker (Barber's Pat.) Flour Sifters, # doz. \$3.00 90¢

Sieves, Tin Rim—
Per dozen.
Mesh, 14, 16, 18, 20
Black, full size, \$0.95 1.28 1.00 1.10
Plated, full size, \$1.05 1.08 1.10 1.20
Black, scant, 80.78 80.80 83

Sieves, Wooden Rim—
Nested, 10, 11 and 12 inch.
Mesh 18, Nested, doz. \$0.65 @ 0.75
Mesh 20, Nested, doz. 75¢ @ .85
Mesh 22, Nested, doz. 90¢ @ 1.00

Sinks—Cast Iron—
Standard list, 65¢ @ 10¢ 70¢
NOTE.—There is not entire uniformity
data used by jobbers.

Wrought Steel—
New Era, Galv'd and Enamelled, 70¢ 75¢
New Era, Painted, 50¢ 10¢
L. & G. Mfg. Co., Galvanized, 50¢
L. & G. Mfg. Co., Enamelled, 50¢

Sinks, Wagon—
Cast Iron, 70¢ @ 10¢ 75¢
Malleable Iron, 40¢ @ 10¢ 50¢
Steel, 40¢ @ 10¢ 100¢

Slates—
Factory Shipments.
"D" Slates, 50¢ @ 10¢ 100¢
Unexcelled, etc., Noiseless Slates, 60¢
Victoria, etc., Noiseless Slates, 60¢
7 tens 5¢
Wire Bound, 50¢ @ 10¢ 55¢
Web Hinge, 50¢

Slaw Cutters—See Cutters.
Slicers, Vegetable—
Sterling # 2.00, 33½¢
Snaps, Harness—
German, 40¢ @ 10¢ 100¢
Covert Mfg. Co., 35¢ 25¢
Derby, 35¢ 25¢
High Grade, 45¢ 25¢
Jockey, 40¢ 25¢
Trojan, 45¢ 25¢
Yankee, 55¢ 25¢
Yankee, Roller, 30¢ 25¢

Covert's Saddlery Works:
Crown, 60¢
German, 60¢
Model, 60¢
Triumph, 60¢
W. & K. T. Hitch Co.:
Bristol, 40¢ @ 10¢
Empire, 50¢ 25¢
German, 40¢
National, 50¢ 25¢
Perfect, 90¢
Clipper, 40¢
Champion, 40¢
Security, 40¢
Victor, 60¢ 25¢

Oneda Community:
Solid Steel, 65¢ @ 10¢ 100¢
Solid Wire, 65¢ @ 10¢ 100¢
Sargent's Patent Guarded, 80¢ @ 10¢ 100¢

Snaths—
Scythe, 60¢ @ 10¢ 100¢
Snips, Tinnors'—See Shears.
Soldering Irons—
See Irons, Soldering.

Spoke Trimmers—
See Trimmers, Spoke.
Spoons and Forks—
Silver Plated.

Good Quality, 50¢ @ 10¢ 60¢ 10¢ 5¢
Cheap, 60¢ @ 10¢ 60¢ 10¢
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton, 40¢ @ 10¢
Rogers & Bro., William Rogers Eagle Brand, 50¢ @ 10¢
Anchor, Rogers Brand, 60¢
Wm. Rogers & Son, 60¢ @ 10¢
Simeon L. & Geo. H. Rogers Co., Silver Plated Flat Ware, 60¢
No. 77 Silver Plated Ware, 60¢ @ 10¢

Miscellaneous—
German Silver, 60¢ @ 10¢ 60¢ 10¢ 10¢
Cattaraugus Cutlery Co.:
Yukon Silver, 50¢
Simeon L. & Geo. H. Rogers Co., German or Nickel Silver, Special list 1. & 10¢

Tinned Iron—
Teas, 45¢ @ 10¢ 50¢
Tables, per gro. 90¢ @ \$1.00

Springs—Door—
Gem (Coll), 20¢
Star (Coll), 30¢
Torrey's Rod, 30 in., # doz. \$1.10 @ 1.25
Victor (Coll), 50¢ @ 10¢ 100¢

Carriage, Wagon, &c.
14 in. and wider:
Black or 1/4 Bright, lb., 4½¢
Bright, lb., 5½¢
Painted Seat Springs:
1½ x 2 x 26 and smaller, per pr. 18¢ @ 53¢
1½ x 2 x 28 per pr., 50¢ @ 61¢
1½ x 3 x 28 and narrower, per pr. 75¢ @ 90¢

Cliff's Springs:
Bolster, 40¢
Seat, per pair, 50¢
Pole, per pair, 1/4 in. \$1.10; 3/4 in. \$1.25

Sprinklers, Lawn—
Enterprise, 25¢ @ 30¢
Philadelphia No. 1, # doz. \$1.12; No. 2, \$1.15; No. 3, \$1.24

Squares—
Nickel plated, List Jan. 5, 1901
Steel and Iron, 75¢ @ 10¢ 55¢
Rosewood Hdl Try Square and T-Bevels, 60¢ @ 10¢ 100¢

Iron Hdl. Try Squares and T-Bevels.
40¢ @ 10¢ 40¢ 100¢
Dixton's Try Sq. and T-Bevels, 60¢ @ 10¢
Winterbottom's Try and Miter, 40¢ @ 10¢ 40¢ 100¢

Squeezers—Lemon—
Wood, Common, gro., No. 0, \$5.25 @ \$5.60; No. 1, \$6.25 @ \$6.50.
Wood, Porcelain Lined:
Cheap, doz. \$3.00 @ 2.75
Good Grade, doz. \$3.00 @ 2.50
Tinned Iron, doz. \$0.75 @ 1.25
Iron, Porcelain Lined doz. \$3.50 @ 5.25
Jennings' Star, # doz. \$1.85 @ 1.90

Staples—
Barbed Blind, lb. 6¢ @ 5½¢
Electricians', Association list, 80¢ @ 10¢ 100¢
Fence Staples, same price as Barbed Wire. See Trade Report.
Poultry Netting, Staples, per lb. 2½¢ @ 2¼¢
Grand Crossing Tack Co.'s list, 80¢ @ 100¢

Steels, Butchers—
Dick's, 30¢
Foster Bros., 30¢
Hartzell Cutlery Co., 30¢ 5¢
C. & A. Hoffmann's, 40¢

Stocks and Dies—
Blacksmiths', 40¢ @ 10¢ 100¢
Gardner Die Stocks No. 1, 50¢
Gardner Die Stocks, larger sizes, 40¢
Green River, 25¢
Lightning Screw Plate, 25¢
Little Giant, 25¢
Rece's New Screw Plates, 30¢
Curtis Reversible Ratchet Die Stock, 25¢

Scythe Stones—
Chicago Wheel & Mfg. Co.:
Gem Corundum, 10 inch, \$5.00 per gro., 12 inch, \$10.00
Pike Mfg. Co. 1901 list:
Black Diamond S. S., # gro. \$12.00
Lamolle S. S., # gro. \$11.00
White Mountain S. S., # gro. \$9.00
Green Mountain S. S., # gro. \$6.00
Extra Indian Pond S. S., # gro. \$7.50
No. 1 Indian Pond S. S., # gro. \$7.00
Leader Red End S. S., # gro. \$4.50
Balance of 1901 list 38½¢

Oil Stones, &c.
Chicago Wheel & Mfg. Co. 1901 list:
Gem Corundum Oil, Double Grit, 50¢
Gem Corundum Oil, Single or Double Grit, 55¢
Gem Corundum Silps, 55¢
Gem Corundum Razor Hones, 50¢
Pike Mfg. Co. 1901 list:
Arkansas Stone, No. 1, 3 to 5 1/4 in. \$2.50
Arkansas Stone, No. 1, 5 to 8 in. \$3.50
Arkansas Silps No. 1, 4 to 8 in. \$4.00
Lily White Washita 4 to 8 in. 60¢
Rosy Red Washita 4 to 8 in. 80¢
Washita Stone, Extra, 4 to 8 in. 50¢
Washita Stone, No. 2, 4 to 8 in. 40¢
Lily White Silps, 90¢
Rosy Red Silps, 90¢
Washita Silps, Extra, 80¢
Washita Silps, No. 1, 70¢
India Oil Stones (entire list) 70¢
Hindustan No. 1, Regular, # doz. \$4.00
Hindustan No. 1, Small, # doz. \$3.00
Axe Stones (all kinds), 30¢
Turkey Oil Stones, ex. 5 to 8 in. \$5.00
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Silps, 10¢
Sand Stone, 5¢
Belgian, German and Swaty Razors, 40¢
Natural Grit Carving Knife Hones, # doz. \$3.00
Quick Edge Pocket Knife Hones, # doz. \$3.00
Mounted Kitchen Sand Stone, # doz. \$1.50

Tanite Mills:
Emery Oil, # doz. \$5.00, 50¢ @ 80¢

Stoners—Cherry—
Enterprise, 25¢ @ 30¢
Stops, Bench—
Morrill's, 15¢ @ 10¢
Morrill's, # doz. No. 1, \$10.00, 50¢
Morrill's, No. 2, \$12.50, 50¢
Stops, Window—
Ives' Patent, 25¢ @ 5¢
Stove Boards—
See Boards, Stove.

Stove Polish—See Polish, Stove.
Strainers, Pump—
Diamond Joe Pump Strainers, per doz. 75¢
Straps, Box—
Cary's Universal, case lots, 90¢ @ 100¢
Stretchers, Carpet—
Cast Iron, Steel Points, doz. 55¢ @ 65¢
Socket, doz. \$1.75

Strops, Razor—
Smith & Hemenway Co., 70¢
Stuffers, Sausage—
Enterprise Mfg. Co., 25¢ @ 25¢ 7½¢
National Specialty Mfg. Co. list Jan. 1, '97, 30¢

Tacks Brads, &c.—
List Jan. 15, '99.
Carpet Tacks, American 90¢ @ 25¢
American Cut Tacks, 90¢ @ 20¢
Suedes Iron Tacks, 90¢ @ 30¢
Suedes Upholsterers' Tacks, 90¢ @ 10¢
Gimp Tacks, 90¢ @ 50¢
Lace Tacks, 90¢ @ 10¢
Trimmers' Tacks, 90¢ @ 25¢
Looking Glass Tacks, 70¢ @ 10¢
Bill Posters and Railroad Tack, 90¢ @ 10¢
Hungarian Nails, 90¢ @ 15¢
Common and Patent Brads, 90¢ @ 10¢
Trunk and Clout Nails, 90¢ @ 5¢

NOTE.—The above prices are for Straight Weights. An extra 5% is given Star Weights and an extra 10% on Standard Weights.

Miscellaneous—
Double Point Tacks, 90¢ @ 10¢ or 7 tens
Steel Wire Brads, E. & E. Mfg. Co.'s list, 50¢ @ 10¢ 60¢
See also Nails, Wire.

Tanks, Oil—
Emerald, S. S. & Co., 30-gal. \$3.20
Emerald, S. S. & Co., 60-gal. \$4.00
Queen City S. S. & Co., 60-gal. \$3.50
Queen City S. S. & Co., 60-gal. \$4.25

Tapes, Measuring—
American Ases' Skin, 40¢ @ 10¢ 50¢
Patent Leather, 25¢ @ 30¢ 55¢
Steel, 40¢ @ 10¢ 55¢
Chesterman's, 25¢ @ 25¢ 55¢
Eddy's Steel, 40¢ @ 40¢ 55¢
Eddy's Metallic, 33½¢ @ 33½¢ 55¢
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899, 35¢
Larkin's Steel, 33½¢ @ 35¢
Larkin's Metallic, 30¢ @ 30¢ 55¢

Teeth Harrow—
Steel Harrow, Teeth, plain or head, ed, bas' per lb. 2½¢

Thermometers—
Tin Case, 80¢ @ 10¢ 50¢ 10¢ 5¢
Ties, Bale—Steel.
Single Loop, 75¢
Other Styles, 70¢

Ties, Wall—
Cleveland Wire Spring Co.:
Galv. Steel 5-32 x 6½ in. # 1000, \$10.00
Galv. Steel 5-32 x 8½ in. # 1000, \$11.00
Galv. Steel 5-32 x 11½ in. # 1000, \$12.00
Galv. Steel 5-32 x 15½ in. # 1000, \$14.00

Tinnors' Shears, &c.—
See Shears, Tinnors', &c.

Tinware—
Stamped, Japanned and Placed, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See Benders and Upsetters, Tire.

Tobacco Cutters—
See Cutters, Tobacco.

Tools—Coopers'—
L. & I. J. White, 90¢ @ 20¢ 55¢
Saw—
Atkins' Cross Cut Saw Tools, 40¢
Simonds' Improved, 39½¢
Simonds' Crescent, 25¢

Ship—
L. & I. J. White, 25¢
Transom Lifters—
See Lifters, Transom.

Traps—Fly—
Balloon, Globe or Acme, doz. \$1.15 @ 1.25; gro. \$1.50 @ 1.90
Harper, Champion or Paragon, doz. \$1.25 @ 1.50; gro. \$1.50 @ 1.50

Game—
Oneida Pattern, 75¢ @ 10¢ 30¢ 55¢
Newhouse, 45¢ @ 15¢ 55¢
Hawley & Norton, 65¢ @ 65¢ 10¢
Victor (Oneida Pattern), 75¢ @ 75¢ 55¢
Star (Blake Pattern), 60¢ @ 60¢ 10¢

Mouse and Rat—
Mouse, Wood, Choker, doz. holes, 8½¢ @ 9¢
Mouse, Round or Square Wire, doz. \$0.85 @ 1.00

American Pattern French Rat and Mouse Traps—
No. 1, Detroit, Martv Pattern, # doz. \$1.50
No. 2, Detroit, Martv Pattern, # doz. \$1.25; in 1/4 gro. lots, # doz. \$3.00
Detroit Martv Pattern Mouse, # doz. \$2.00; in 1/4 gro. lots, # doz. \$1.75
Diamond Joe Mouse Traps, per doz. 60¢
Diamond Joe Rat Traps, per doz. \$1.00
Martv French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each \$1.12½; # doz. \$12.00
No. 3, Rat, # doz. \$6.00; case of 50 \$5.25 doz.
No. 3½, Rat, # doz. \$4.75; case of 72 \$4.25 doz.
No. 4, Mouse, # doz. \$3.50; case of 72 \$3.75 doz.
No. 5, Mouse, # doz. \$2.75; case of 150 \$2.25

Schuyler's Rat Killer, No. 1, # gr. \$30.00; No. 2, # gr. \$30.00; Mouse, No. 3, \$18.00, 50¢
Markle's, each, 85¢
Trimmers, Spoke—
Bonney's Nos. 1 and 2, 40¢

Trowels—
Dixton Brick and Pointing, 80¢
Dixton Plastering, 25¢
Dixton "Standard Brand" and Garden Trowels, 40¢
Never-Break Steel Garden Trowels, gro. \$7.00
Peace's Plastering, 30¢
Rose Brick and Plastering, 25¢ 5¢
Woodrough & McFarlin, Plastering, 25¢

Trucks, Warehouse, &c.—
R. & L. Block Co.'s list, 50¢
Daisy Stove Trucks, Improved pattern, # doz. \$18.50
Model Stove Trucks, # doz. \$18.50

Tubs, Wash—
No. 1 2 3
Galvanized, per doz. \$5.00 5.50 6.00
Galvanized Wash Tubs (S. S. & Co.), No. 1 2 3 10 20 30
Per doz. \$5.25 6.00 6.75 7.50 8.00

Twine—
Miscellaneous—BC B.
No. 3, 1/4 and 1/2-lb. Balls, 25¢ 24¢
No. 12, 1/4 and 1/2-lb. Balls, 15¢ 20¢
No. 18, 1/4 and 1/2-lb. Balls, 16¢ 18¢
No. 24, 1/4 and 1/2-lb. Balls, 17¢ 17¢
No. 36, 1/4 and 1/2-lb. Balls, 15¢ 17¢

Chalk Line, Cotton, 1/4-lb. Balls, 25¢ @ 2½¢
Cotton Mops, 6, 9, 12 and 15 lb., 70¢ @ 75¢
Cotton Wrapping, 5 Balls to lb. according to quality, 10¢ @ 17¢
American 3-Ply Hemp, 1/4 and 1/2-lb. Balls, 15¢ @ 11¢
American 3-Ply Hemp, 1-lb. Balls, 13¢ @ 11¢
India 3-Ply Hemp, 1/4 and 1/2-lb. Balls (Spring Twine), 8¢
India 3-Ply Hemp, 1-lb. Balls, 8¢
India 3-Ply Hemp, 1½-lb. Balls, 7¢
2, 3, 4 and 5-Ply Jute, 1/4-lb. Balls, 9¢ @ 10¢
Mason Line, Linen, 1/4-lb. Balls, 15¢
No. 264 Mattress, 1/4 and 1/2-lb. Balls, 37¢
Wool, 3 to 6 ply, 50¢ @ 50¢ 10¢

Vises—
Solid Box, 50¢ @ 50¢ 10¢

Parallel—
Athol Machine Co.:
Simpson's Adjustable, 40¢
Standard, 40¢
Amateur, 25¢
Bonney's, 40¢
Columbian Hdw. Co., 40¢
Fisher & Norris Double Screw, 15¢ @ 10¢
Hollands', 40¢
Machinists', 40¢
Key-tone, 65¢ 5¢
Lewis Tool Co., 90¢ @ 30¢
Massey's Perfect, 15¢ @ 20¢
Massey's, 20¢ @ 25¢
Climber, 80¢ @ 40¢
Combination, Quick Adj., 40¢
Woodworker's, 15¢ @ 20¢
Prentiss, 20¢ @ 25¢
Miller's Falls, 50¢ @ 10¢ 10¢
Parker's, 20¢ @ 25¢
Victor, 20¢ @ 25¢
Regulars, 20¢ @ 25¢
Vulcan's, 40¢ @ 45¢
Combination Pipe, 55¢ @ 60¢
Prentiss, 20¢ @ 25¢
Sargent's, 40¢
Sneliker's X, 1, 20¢ @ 25¢
Stephens', 20¢ @ 25¢

Saw Filers—
Bonney's No. 1, \$13; No. 3, \$16, 50¢
Dixton's D 3 Clamp and Guide, # doz. \$30.00, 25¢
Reading, 60¢
Wentworth's Rubber Jaw, Nos. 1, 2 and 3, 45¢ @ 50¢

Miscellaneous—
Bignall & Keeler Combination Pipe, Vise, 60¢
Parker's Combination Pipe: 87 Series, 60¢
187 Series, 60¢ 5¢
No. 870, 40¢

Wads—Price Per M.
B. E., 11 up, 60¢
B. E., 9 and 10, 70¢
B. E., 8, 80¢
B. E., 7, 80¢
P. E., 11 up, \$1.00
P. E., 9 and 10, 1.25
P. E., 8, 1.50
P. E., 7, 1.50
Ely's B. E., 11 and larger, \$1.70 @ 1.75
Ely's P. E., 12 to 20, \$3.00 @ 3.25

Wagon Jacks—
See Jacks, Wagon.

Ware, Hollow—
Aluminum—
S. S. & Co. Reduced List, 40¢

Cast Iron, Hollow—
Stove Hollow Ware:
Ground, 65¢
Unground, 70¢
White Enamelled Ware:
Mastin Kettles, 75¢ @ 10¢ 50¢
Covered Ware:
Tinned and Turned, 40¢ @ 10¢ 10¢ 55¢
Enamelled and Platin, 50¢ @ 50¢ 10¢ 55¢
See also Pots, Glue.

Enamelled—
Agate Nickel Steel Ware, list Nov. 1, '01, 80¢ @ 30¢
Iron Clad Ware, 70¢ @ 10¢
Never Break Enamelled, 50¢ @ 50¢ 10¢

Tea Kettles—
Galvanized Tea Kettles:
Inch, 6 7 8 9
Each, 45¢ 50¢ 55¢ 65¢

Steel Hollow Ware.
Avery Spiders & Griddles, 65¢ @ 65¢ 55¢
Avery Kettles, 60¢
Porcelain, 50¢ @ 50¢ 10¢
Never Break Spiders and Griddles, 65¢ 55¢
Never Break Kettles, 60¢
Solid Steel Spiders & Griddles, 65¢ 55¢
Solid Steel Kettles, 60¢
Solid Steel Ware, Enamelled, 50¢ @ 55¢

Washboards—
Solid Zinc, # doz.
Crescent, family size, bent frame, \$3.00
Red Star, family size, stationary protector, \$1.00
Double Zinc Surface:
Saginaw Globe, family size, stationary protector, \$2.65
Cable Cross, family size, stationary protector, \$2.90
Single Zinc Surface:
Nalad, family size, open back perforated, 60¢ @ 10¢
Saginaw Globe, protector, family size, ventilated back, \$2.25

Sieves and Sifters—

Hunter's Imitation, gro. \$11.00@11.50
 Buffalo Metallic Blued, S. S. & Co., per gr. \$11.00
 14x16 16x18 18x20
 \$12.90 \$13.80 \$15.00
 F. J. Meyers' Mfg. Co.:
 Electric Light, per gr. \$11.00
 Hunter's genuine, per gr. \$12.50
 No Name, Hunter's, per gr. \$11.00
 Standard, per gr. \$11.00
 Shaker (Barber's Pat.) Flour Sifters,
 per doz. \$2.00 30%

Sieves, Tin Rim—

Per dozen.
 Mesh 14 16 18 20
 Black, full size, \$0.95 98 1.00 1.10
 Plated, full size, \$1.05 1.08 1.10 1.20
 Black, scant, \$0.78 80 .83

Sieves, Wooden Rim—

Nested, 10, 11 and 12 inch.
 Mesh 18, Nested, doz. \$0.65@0.75
 Mesh 20, Nested, doz. .75@.85
 Mesh 24, Nested, doz. .90@1.00

Sinks—

Cast Iron—
 Standard list 65¢@10¢70¢. 3
 NOTE.—There is not entire uniformity
 listed used by jobbers.

Wrought Steel—

New Era, Galv'd and Enamelled, 70¢5¢
 New Era, Painted, 60¢10¢
 L. & G. Mfg. Co., Galvanized, 50¢
 L. & G. Mfg. Co., Enamelled, 50¢

Sinks, Wagon—

Cast Iron, 70¢@10¢75¢
 Malleable Iron, 40¢@10¢10¢
 Steel, 40¢@10¢10¢

Slates—

Factory Shipments.
 "D" Slates, 50¢10¢10¢10¢
 Unexcelled, etc., Noiseless Slates, 60¢
 & 8 tens 6¢
 7 tens 6¢5¢

Victoria, etc., Noiseless Slates, 60¢
 Wire Bound, 7 tens 6¢5¢
 Web Hinge, 50¢

Slaw Cutters—See Cutters.**Slicers, Vegetable—**

Sterling \$2.00 33%

Sinks, Harness—

German, 40¢@10¢10¢
 Covert Mfg. Co.:
 Derby, 35¢2¢
 High Grade, 45¢2¢
 Jockey, 45¢2¢
 Trojan, 45¢2¢
 Yankee, 35¢2¢
 Yankee, Roller, 30¢2¢

Covert's Saddlery Works:

Crown, 60¢
 German, 60¢
 Model, 60¢
 Triumph, 60¢
 W. & E. T. Fitch Co.:
 Bristol, 40¢10¢
 Empire, 50¢5¢
 German, 40¢
 National, 50¢5¢
 Perfect, 45¢
 Clipper, 50¢5¢
 Champion, 40¢5¢
 Security, 40¢5¢
 Victor, 40¢5¢
 Onoda Community:
 Solid Steel, 65¢65¢10¢
 Solid Silver, 65¢10¢65¢10¢10¢
 Sargent's Patent Guarded, 60¢5¢10¢

Snaths—

Scythe, 50¢@10¢10¢

Snips, Tinnings—See Shears.**Soldering Irons—**

See Irons, Soldering.

Spoke Trimmers—

See Trimmers, Spoke.

Spoons and Forks—

Silver Plated—
 Good Quality, 50¢10¢60¢10¢5¢
 Cheap, 60¢10¢60¢10¢
 International Silver Co.:
 1847 Rogers Bros. and Rogers & Hamill,
 40¢10¢
 Rogers & Bro., William Rogers Eagle
 Brand, 50¢10¢
 Anchor, Rogers Brand, 60¢
 Wm. Rogers & Son, 60¢10¢
 Simeon L. & Geo. H. Rogers Co.:
 Silver Plated Flat Ware, 60¢
 No. 17 Silver Plated Ware, 60¢10¢

Miscellaneous—

German Silver, 60¢10¢60¢10¢10¢
 Cataragus Cutlery Co.:
 Yukon Silver, 30¢
 Simeon L. & Geo. H. Rogers Co.:
 German or Nickel Silver, Special list
 1. & 10%

Tinned Iron—

Teas, per gro. 45¢5¢
 Tables, per gro. 90¢@1.00

Springs—

Door—
 Gem (Coll), 30¢
 Star (Coll), 30¢
 Torrey's Rod, 39 in., per doz. \$1.10@1.25
 Victor (Coll), 50¢10¢10¢

Carriage, Wagon, &c.

1/4 in. and wider:
 Black or 1/2 Bright, lb. 43¢
 Bright, lb. 53¢
 Painted Seat Springs:
 1 1/2 x 2 1/2 and smaller, per pr. 48¢53¢
 1 1/2 x 2 1/2 and smaller, per pr. 50¢61¢
 1 1/2 x 3 1/2 and narrower, per pr. 75¢90¢

Sprinklers, Lawn—

Enterprise, 25¢30¢
 Philadelphia No. 1, per doz. \$12; No. 2,
 \$15; No. 3, \$24.

Squares—

Nickel plated, List Jan. 5, 1901
 Steel and Iron, 70¢75¢65¢
 Rosewood Hall Try Square and T-Bevels,
 60¢10¢10¢70¢

Iron Hdl. Try Squares and T-Bevels.

40¢10¢40¢10¢10¢
 Dinton's Try Sq. and T-Bevels, 60¢10¢
 Winterbottom's Try and Miter,
 40¢10¢40¢10¢10¢

Squeezers—

Lemon—
 Wood, Common, gro., No. 0, \$5.25
 @5.60; No. 1, \$6.25@6.50.

Wood, Porcelain Lined:

Cheap, doz. \$2.00@2.75
 Good Grade, doz. \$3.00@3.50
 Tinned Iron, doz. \$0.75@1.25
 Iron, Porcelain Lined doz. \$2.90@3.25
 Jennings' Star, per doz. \$1.85@1.90

Staples—

Barbed Blind, lb. 6¢@6¢
 Electricians', Association list,
 80¢10¢10¢10¢

Fence Staples, same price as Barbed
 Wire. See Trade Report.

Poultry Netting, Staples, per lb. 34¢34¢

Grand Crossing Tack Co.'s list, 80¢10¢

Steels, Butchers'—
 Dick's, 30¢
 Foster Bros', 30¢
 Hartzell Cutlery Co., 30¢5¢
 C. & A. Hoffmann's, 40¢

Steelyards, 25¢25¢10¢

Stocks and Dies—

Blacksmiths', 40¢@10¢10¢
 Gardner Die Stocks No. 1, 50¢
 Gardner Die Stocks, larger sizes, 40¢
 Green River, 25¢
 Lightning Screw Plate, 25¢
 Little Giant, 25¢
 Reace's New Screw Plates, 25¢30¢
 Curtis Reversible Ratchet Die Stock, 25¢

Stone—**Scythe Stones—**

Chicago Wheel & Mfg. Co.:
 Gem Corundum, 10 inch, \$8.00 per
 gro., 12 inch, \$10.00

Pike Mfg. Co. 1901 list:
 Black Diamond S. S., per gro. \$12.00
 Lamolite S. S., per gro. \$11.00
 White Mountain S. S., per gro. \$9.00
 Green Mountain S. S., per gro. \$6.00
 No. 1 Indian Pond S. S., per gro. \$7.50
 No. 2 Indian Pond S. S., per gro. \$4.50
 Leader Red End S. S., per gro. \$4.50
 Balance of 1901 list 83%

Oil Stones, &c.

Chicago Wheel & Mfg. Co., 1901 list:
 Gem Corundum Oil, Double Grit, 50¢
 Gem Corundum Axe, Single or Double
 Grit, 55¢
 Gem Corundum Slips, 55¢
 Gem Corundum Razor Hones, 50¢
 Pike Mfg. Co. 1901 list:
 Arkansas Stone, No. 1, 3 to 5 in., \$2.93
 Arkansas Stone, No. 1, 5 to 8 in., \$3.50
 Arkansas Slips No. 1, \$4.00
 Lily White Washita 4 to 8 in., 60¢
 Rosy Red Washita 4 to 8 in., 60¢
 Washita Stone, Extra, 4 to 8 in., 50¢
 Washita Stone, No. 1, 4 to 8 in., 40¢
 Washita Stone, No. 2, 4 to 8 in., 30¢
 Lily White Slips, 90¢
 Rosy Red Slips, 90¢
 Washita Slips, Extra, 80¢
 Washita Slips, No. 1, 70¢
 India Oil Stones (entire list), 25¢
 Hindostan No. 1, Regular, 10¢ 10¢
 Hindostan No. 1 Small, 10¢ 10¢
 Axe Stones (all kinds), 83¢
 Turkey Oil Stones, ex. 5 to 8 in., 30¢
 Queer Creek Stones, 4 to 8 in., 30¢
 Queer Creek Slips, 40¢
 Sand Stone, 40¢
 Belgian, German and Swaty Razor
 Hones, 40¢
 Natural Grit Carving Knife Hones,
 per doz. \$3.00
 Quick Edge Pocket Knife Hones,
 per doz. \$8.00
 Mounted Kitchen Sand Stone,
 per doz. \$1.50

Tanite Mills:
 Emery Oil, per doz. \$5.00 50¢60¢

Stoners—**Cherry—**

Enterprise, 25¢30¢

Stops, Bench—

Millers Falls, 15¢10¢
 Morrill's, per doz. No. 1, \$10.00 50¢
 Morrill's, No. 2, \$12.50 50¢

Stops, Window—

Ives' Patent, 25¢25¢

Stove Boards—

See Boards, Stove.

Stove Polish—See Polish, Stove.**Strainers, Pump—**

Diamond Joe Pump Strainers, per doz. 75¢

Straps, Box—

Cary's Universal, case lots, 20¢10¢

Stretchers, Carpet—

Cast Iron, Steel Points, doz. 55¢@55¢
 Socket, doz. \$1.75

Strops, Razor—

Smith & Hemenway Co., 70¢

Stuffers, Sausage—

Enterprise Mfg. Co., 25¢25¢74¢
 National Specialty Mfg. Co., list Jan.
 1, '01, 30¢

Tacks Brads, &c.—

List Jan. 15, '99.
 Carpet Tacks, American 90¢25¢
 American Cut Tacks, 90¢20¢
 Suedes Iron Tacks, 90¢30¢
 Suedes Upholsterers' Tacks, 90¢40¢
 Gimp Tacks, 90¢50¢
 Lace Tacks, 90¢10¢
 Trimmers' Tacks, 90¢25¢
 Locking Glass Tacks, 70¢10¢
 Bill Posters' and Railroad Tack, 90¢10¢
 Hungarian Nails, 80¢15¢
 Common and Patent Brads, 80¢10¢
 Trunk and Clout Nails, 90¢55¢

NOTE.—The above prices are for
 Straight Weights. An extra 5% is given
 Star Weights and an extra 10% on
 Standard Weights.

Miscellaneous—

Double Point Tacks, 90¢6¢ or 7 tens
 Steel Wire Brads, R. & E. Mfg.
 Co.'s list, 50¢10¢60¢

Tanks, Oil—

Emerald, S. S. & Co., 30-gal. \$3.30
 Emerald, S. S. & Co., 60-gal. \$4.00
 Queen City S. S. & Co., 30-gal. \$3.50
 Queen City S. S. & Co., 60-gal. \$4.25

Tapes, Measuring—

American Asnes' Skin, 40¢10¢50¢
 Patent Leather, 25¢30¢5¢
 Steel, 40¢10¢5¢
 Chesterman's, 25¢25¢5¢
 Eddy's Steel, 40¢40¢5¢
 Eddy's Metallic, 33¢43¢5¢
 Keuffel & Esser Co., Steel and Metallic,
 Lower list, 1899, 35¢
 Lufkin's Steel, 33¢43¢5¢
 Lufkin's Metallic, 30¢30¢5¢

Teeth Harrow—

Steel Harrow Teeth, plain or head-
 ed, bar, per lb. 24¢

Thermometers—

Tin Case, 80¢10¢30¢10¢5¢

Ties, Bale—Steel.

Single Loop, 75¢
 Other Styles, 70¢

Ties, Wall—

Cleveland Wire Spring Co.:
 Galv. Steel 5 3/8 x 3 1/2 in. \$100.00
 Galv. Steel 5 3/8 x 3 1/2 in. \$100.00
 Galv. Steel 5 3/8 x 3 1/2 in. \$100.00
 Galv. Steel 5 3/8 x 3 1/2 in. \$100.00

Tinners' Shears, &c.—

See Shears, Tinnings, &c.

Tinware—

Stamped, Japanned and Plated, sold
 very generally at net prices.

Tire Benders, Upsetters,

&c.—See Benders and Upset-
 ters, Tire.

Tobacco Cutters—

See Cutters, Tobacco.

Tools—

Coopers'—
 L. & I. J. White, 20¢20¢5¢

Saw—

Atkins' Cross Cut Saw Tools, 40¢
 Simonds' Improved, 33¢43¢
 Simonds' Crescent, 25¢

Ship—

L. & I. J. White, 25¢

Transom Lifters—

See Lifters, Transom.

Traps—Fly—

Balloon, Globe or Acme, doz. \$1.15@1.25; gro. \$1.50@1.75
 Harper, Champion or Paragon,
 doz. \$1.25@1.50; gro. \$1.50@1.75

Game—

Oneida Pattern, 75¢10¢5¢30¢5¢
 Newhouse, 45¢45¢5¢
 Hawley & Norton, 65¢5¢85¢10¢
 Victor (Oneida Pattern), 75¢75¢10¢
 Star (Blake Pattern), 60¢5¢60¢10¢

Mouse and Rat—

Mouse, Wood, Choker, doz. holes, 8¢@9¢
 Mouse, Round or Square Wire, doz. \$0.85@1.00

American Pattern French Rat and Mouse
 Traps:
 No. 1, Detroit Marty Pattern, per doz.
 \$4.50; in 1/2 gro. lots, per doz. \$4.00
 No. 2, Detroit Marty Pattern, per doz.
 \$4.25; in 1/2 gro. lots, per doz. \$3.90
 Detroit Marty Pattern Mouse, per doz.
 \$2.00; in 1/2 gro. lots, per doz. \$1.75
 Diamond Joe Mouse Traps, per doz. \$1.00
 Diamond Joe Rat Traps, per doz. \$1.00
 Marty French Rat and Mouse Traps
 (Genuine):
 No. 1, Rat, Each \$1.13 1/4; per doz. \$12.00
 No. 3, Rat, per doz. \$6.00; case of 50
 No. 3 1/2, Rat, per doz. \$4.75; case of 72
 No. 4, Mouse, per doz. \$3.50; case of 72
 No. 5, Mouse, per doz. \$2.75; case of 150
 Schuyler's Rat Killer, No. 1, per gr. \$30.00;
 No. 2, per gr. \$30.00; Mouse, No. 3,
 \$18.00 50%

Target—

Markle's, each, \$5.50

Trimmers, Spoke—

Bonney's No. 1 and 2, 40%

Trowels—

Diston Brick and Pointing, 30¢
 Diston Plastering, 25¢
 Diston "Standard Brand" and Gar-
 den Trowels, 40¢
 Never-Break Steel Garden Trowels,
 gro. \$7.00

Peace's Plastering, 30¢
 Rose Brick and Plastering, 25¢5¢
 Woodrough & McFarlin, Plastering, 25¢

Trucks, Warehouse, &c.—

R. & L. Block Co.'s list, 50¢
 Dalay Stove Trucks, Improved pattern,
 per doz. \$18.50
 Model Stove Trucks, per doz. \$18.50

Tubs, Wash—

No. 1 2 3
 Galvanized, per doz. \$5.00 5.50 6.00
 Galvanized Wash Tubs (S. S. & Co.):
 No. 1 2 3 10 20 30
 Per doz. \$5 25 0.00 0.75 0.50 7.25 7.00

Twine—

Miscellaneous—
 No. 1, 2 1/2 and 3-lb. Balls, 20¢ 25¢
 No. 2, 3 1/2 and 4-lb. Balls, 18¢ 20¢
 No. 3, 4 1/2 and 5-lb. Balls, 16¢ 18¢
 No. 4, 5 1/2 and 6-lb. Balls, 15¢ 17¢
 No. 5, 6 1/2 and 7-lb. Balls, 15¢ 17¢

Chalk Line, Cotton, 1/2-lb. Balls...

25¢25¢4¢
 Cotton Mops, 6, 9, 12 and 15 lb., 10¢
 Cotton W rapping, 5 Balls to lb., 10¢
 according to quality, 10¢c@17c
 American 3-Ply Hemp, 1/4 and 1/2-lb.
 Balls, 15¢11c
 American 3-Ply Hemp, 1-lb. Balls, 15¢11c

India 2-Ply Hemp, 1/4 and 1/2-lb.
 Balls (Spring Teine), 15¢
 India 3-Ply Hemp, 1-lb. Balls, 15¢
 India 3-Ply Hemp, 1 1/2-lb. Balls, 15¢
 2, 3, 4 and 5-Ply Jute, 1/2-lb. Balls, 15¢

Mason Line, Linen, 1/2-lb. Balls, 15¢
 No. 264 Mattress, 1/4 and 1 1/2-lb. Balls, 15¢
 Wool, 3 to 6 ply, 15¢

Vises—

Solid Box, 50¢@50¢10¢

Parallel—

Atchafalca Machine Co.:
 Simpson's Adjustable, 40¢
 standard, 40¢
 Amateur, 25¢
 Bonney's, 40¢
 Columbian Hdw. Co., 40¢
 Fisher & Norris Double Screw, 15¢10¢
 Hollands', 40¢
 Machinists', 40¢
 Key-tone, 65¢5¢
 Lewis Tool Co., 20¢30¢
 Massey's Perfect, 15¢20¢
 Massey's, 80¢40¢
 Combination, Quick Adj., 40¢
 Woodworker's, 15¢30¢
 Merrill's, 20¢
 Miller's Falls, 50¢10¢10¢
 Parker's:
 Victor, 20¢25¢
 Regulars, 20¢25¢
 Vulcan's, 40¢45¢
 Combination Pipe, 20¢25¢
 Prentiss, 20¢25¢
 Sargent's, 40¢
 Snediker's X. L., 20¢25¢
 Stephens', 20¢25¢

Saw Filers—
 Bonney's, No. 1, \$13; No. 3, \$16 50¢
 Dinton's D S Clamp and Guide, per doz.
 \$30.00 25¢
 Reading, 60¢
 Wentworth's Rubber Jaw, Nos. 1, 2
 and 3, 45¢50¢

Miscellaneous—

Signal & Keeler Combination Pipe
 Vise, 60¢

Parker's Combination Pipe:
 87 Series, 60¢
 187 Series, 60¢5¢
 No. 870, 40¢

Wads—Price Per M.

B. E., 11 up, 60¢
 B. E., 9 and 10, 70¢
 B. E., 8, 80¢
 B. E., 7, 80¢
 P. E., 11 up, \$1.00
 P. E., 9 and 10, 1.25
 P. E., 8, 1.50
 P. E., 7, 1.50
 Ely's B. E., 11 and larger, \$1.70@1.75
 Ely's P. E., 12 to 20, \$3.00@3.25

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Brass Surface:
Brass King, Single Surface, open
back \$3.00
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface
..... \$3.00

Washers—**Leather, Axle—**

Solid..... \$5.00 10 1/2 10 1/2 10 1/2 10 1/2
Patent..... \$5.00 10 1/2 10 1/2 10 1/2 10 1/2
Coil: 3/4 1 1 1/4 1 1/2 1 3/4 1 3/4
10c 11c 12c 13c per 100

Iron or Steel

Size bolt.... 5-16 3/4 1/2 3/4 1/2
Washers..... \$5.00 10 1/2 10 1/2 10 1/2 10 1/2
In lots less than one keg add 1/4c per
lb., 5-lb. boxes add 1/4c to list.

Cast Washer—

Over 1/2 inch, barrel nuts, per lb.....
1 1/4 1 1/4 1 1/4 1 1/4

Washer Cutters—

See Cutters, Washer.

Washing Machines—

See Machines, Washing.

Water Coolers—

See Coolers, Water.

Wedges—

Oil Finish..... lb. 2.90 @ 3.100

Weights, Sash—

Per ton, f.o.b. factory:
Eastern District..... \$20.00 @ 21.00

Western, Central and Southern
Districts..... \$22.50 @ 23.00

Well Buckets, Galvanized
See Pails, Galvanized.

Wheels Well—

8-in. \$1.45 @ 1.65; 10-in. \$1.75 @ 2.00;
12-in. \$2.35 @ 2.50; 14-in. \$3.50 @ 3.75

Wire and Wire Goods—

Bright and Annealed:

6 to 9..... 7 1/2 @ 5 @ 7 1/2 @ 10 1/2
10 to 18..... 7 1/2 @ 10 @ 7 1/2 @ 10 1/2
19 to 26..... 7 1/2 @ 10 1/2 @ 7 1/2 @ 10 1/2
27 to 36..... 7 1/2 @ 10 1/2 @ 7 1/2 @ 10 1/2

Galvanized:

6 to 18..... 7 1/2 @ 10 @ 7 1/2 @ 10 1/2
19 to 26..... 7 1/2 @ 10 1/2 @ 7 1/2 @ 10 1/2
27 to 36..... 7 1/2 @ 10 1/2 @ 7 1/2 @ 10 1/2

Coppered:

6 to 9..... 7 1/2 @ 10 @ 7 1/2 @ 10 1/2
10 to 18..... 7 1/2 @ 10 @ 7 1/2 @ 10 1/2
19 to 26..... 7 1/2 @ 10 1/2 @ 7 1/2 @ 10 1/2
27 to 36..... 7 1/2 @ 10 1/2 @ 7 1/2 @ 10 1/2

Tinned:

6 to 18..... 7 1/2 @ 10 @ 7 1/2 @ 10 1/2
19 to 26..... 7 1/2 @ 10 1/2 @ 7 1/2 @ 10 1/2
27 to 36..... 7 1/2 @ 10 1/2 @ 7 1/2 @ 10 1/2

Annealed Wire on Spools..... 70 @ 5 @ 70
@ 10

Brass and Copper Wire on Spools.....
60 @ 5 @ 60 @ 10

Brass, list Feb. 26, '96..... 20 @ 15

Copper, list Feb. 26, '96..... 15 @ 10

Cast Steel Wire..... \$5.00 to 2.40

Stub Steel Wire..... \$5.00 to 2.40

Wire Clothes Line, see Lines.

Wire Picture Cord, see Cord.

Bright Wire Goods—

List April 1, 1901..... 85 @ 10

Wire Cloth and Netting.....

Galvanized Wire Netting, 80 @ 20 @ 1.00

Painted Screen Cloth per 100 ft. \$1.00

Light Hardware Grade:

2-18 Mesh, Plain (See list) sq. ft. 14 @ 14

2-18 Mesh, Galv. (See list) sq. ft. 24 @ 24

Wire, Barb—See Trade Report.

Wire Rope—See Rope, Wire.

Wrenches—

Agricultural..... 70 @ 10 @ 75 @ 5

Case lots..... 75 @ 10

Acme..... 30 @ 10

Alligator..... 70 @ 10

Baxter's S..... 60 @ 10

Bull Dog..... 70 @ 10

Bemis & Call's..... 35 @ 5

Adjustable S..... 10 @ 10

Brigg's Pattern..... 30 @ 10

Combination Black..... 40 @ 5

Combination Bright..... 40 @ 10

Cylinder or Gas Pipe..... 55 @ 10

Extra Heavy..... 45 @ 10

Merrick's Pattern..... 50 @ 10

No. 3 Pipe, Bright..... 55 @ 10

Bindley Automatic..... 30 @ 10

Boardman's..... 35 @ 10

Coe's Genuine..... 40 @ 10 @ 5 @ 5

Coe's "Mechanics"..... 40 @ 10 @ 5 @ 5

Donohue's Engineer..... 40 @ 10

Eagle..... 50 @ 10

Elgin Wrenches..... 40 @ 10

Elgin Monkey Wrench Pipe Jaws..... 35 @ 10

Gem Pocket..... 30 @ 10

Hercules..... 70 @ 10

Knife Handle, Machinists' (W. & B.).....

Case lots..... 50 @ 10

Less than case lots..... 50 @ 5

Improved Pipe (W. & B.)..... 50 @ 5 @ 10

Solid Handles, P.S. & W..... 50 @ 5 @ 10

Stills..... 65 @ 10

Triumph..... 60 @ 10

Viccan Chain..... 50 @ 10

Wrought Goods—

Staples, Hooks, etc., list March 17

'92..... 50 @ 10 @ 10

Yokes, Neck—

Covert Saddle Works, Trimmer 1.00 @ 5

Covert Saddle Works, Neck Yoke.....

Centers..... 70 @ 10

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers & Freighters'.....

list net

Zinc—

Sheet..... lb 6 1/4 @ 6 1/4

PAINTS, OILS AND COLORS—Wholesale Prices.**White Lead, Zinc, &c.**

Lead, English white, in Oil..... 7 1/2 @ 9 1/2

Lead, American White, in Oil:

Lots of 500 lb or over..... @ 8

Lots less than 500 lb..... @ 8 1/2

Lead, White, in oil, 25 lb tin

pails, add to keg price..... @ 1/4

Lead, White, in oil, 12 1/2 lb tin

pails, add to keg price..... @ 1

Lead, White, in oil, 1 to 5 lb as-

sorted tins add to keg price..... @ 1 1/4

Lead, White, Dry in bbls..... 5 @ 6

Lead, American, Terms: On lots of 500

lbs. and over, 60 days, or 25 for cash if

paid in 15 days from date of invoice.

Zinc, American, dry..... 7 1/2 @ 4 1/2

Zinc, Paris, Red Seal, dry..... @ 8 1/2

Zinc, Paris, Green Seal, dry..... @ 9 1/2

Zinc, Antwerp, Red Seal, dry..... @ 8 1/2

Zinc, Antwerp, Green Seal, dry..... @ 8

Zinc, V. M. French, in Poppy Oil,

Green Seal:

Lots of 1 ton and over..... 12 @ 12 1/2

Lots less than 1 ton..... 12 1/2 @ 12 1/2

Zinc, V. M. French, in Poppy Oil,

Red Seal:

Lots of 1 ton and over..... 10 1/2 @ 11 1/2

Lots less than 1 ton..... 11 @ 11 1/2

Discounts.—V. M. French Zinc.—Dis-

counts to buyers of 10 bbl. lots of one or

assorted grades, 1 1/2 25 bbls. 2 1/2; 50

bbls. 4 1/2.

Dry Colors.

Black, Carbon..... 5 @ 8

Black, Drop, Amer..... 4 @ 7

Black, Drop, Eng..... 7 @ 11

Black, Ivory..... 12 @ 21

Lamp, Com..... 4 1/2 @ 6

Blue, Celestial..... 30 @ 35

Blue, Chinese..... 30 @ 35

Blue, Prussian..... 28 @ 34

Blue, Ultramarine..... 4 @ 20

Brown, Spanish..... 1 @ 1

Brown, Vandyke, Amer..... 1 1/2 @ 2 1/2

Brown, Vandyke, Foreign..... 3 1/2 @ 3 1/2

Carmine, No. 40..... 7 1/2 @ 8 1/2

Green, Chrome, ordinary..... 5 @ 8 1/2

Green, Chrome, pure..... 18 @ 20

Lead, Red, bbls, 1/2 bbls. and kegs:

Lots 500 lb or over..... @ 5 1/2

Lots less than 500 lb..... @ 6

Litharge, bbls, 1/2 bbls. and kegs:

Lots 500 lb or over..... @ 5 1/2

Lots less than 500 lb..... @ 6

Ocher, French Washed..... 13 1/2 @ 13 1/2

Ocher, Dutch Washed..... 13 1/2 @ 13 1/2

Ocher, American..... 10 @ 10 @ 15.00

Orange Mineral, English..... 7 1/2 @ 8

Orange Mineral, French..... 11 1/2 @ 12

Orange Mineral, German..... 8 @ 10 1/2

Orange Mineral, American..... 7 1/2 @ 7 1/2

Red, Indian, English..... 4 1/2 @ 8 1/2

Red, Indian, American..... 5 @ 8 1/2

Red, Turkey, English..... 4 @ 6

Red, Tuscan, English..... 7 @ 10

Red, Venetian, Amer..... 100 @ 1.75

Red Venetian, English..... 100 @ 1.80 @ 3.00

Sienna, Italian, Burnt and

Powdered..... 3 1/2 @ 7 1/2

Sienna, Ital., Raw, Powd..... 3 1/2 @ 7 1/2

Sienna, American, Raw..... 1 1/2 @ 2

Sienna, American, Burnt and

Powdered..... 1 1/2 @ 2

Talc, French..... 100 @ 1.25 @ 1.50

Talc, American..... 90 @ 1.10

Terra Alba, French..... 100 @ 1.00

Terra Alba, English..... 85 @ 1.00

Terra Alba, American No. 1..... 85 @ 1.00

Terra Alba, American No. 2..... 45 @ 50

Umber, Turkey, Bnt. & Powd..... 2 1/2 @ 3 1/2

Umber, Turkey, Raw & Powd..... 2 1/2 @ 3 1/2

Umber, Bnt. Amer..... 1 1/2 @ 2

Umber, Raw, Amer..... 1 1/2 @ 2

Yellow, Chrome..... 10 1/2 @ 25

Vermilion, American Lead..... 10 @ 40

Vermilion, Quicksilver, bulk..... @ 71

Vermilion, Quicksilver, bags..... @ 71

Vermilion, English, Import..... 80 @ 95

Vermilion, Chinese..... \$1.05 @ 1.20

Colors in Oil.

Black, Lampblack..... 13 @ 14

Blue, Chinese..... 36 @ 40

Blue, Prussian..... 32 @ 35

Blue, Ultramarine..... 13 @ 16

Brown, Vandyke..... 9 1/2 @ 13

Green, Chrome..... 10 @ 12

Green, Paris..... @ 21

Sienna, Raw..... 10 @ 13

Sienna, Burnt..... 10 @ 13

Umber, Raw..... 9 1/2 @ 13

Umber, Burnt..... 9 1/2 @ 13

Miscellaneous.

Barytes, Foreign, # ton..... \$10.00 @ 21.00

Barytes, Amer. floated..... 18.00 @ 20.00

Barytes, Crude, No. 1..... 9.00 @ 10.00

Chalk, in bulk..... # ton 2.50 @ 2.80

Chalk, in bbls..... # 100 @ 35

China Clay, English, # ton 12.00 @ 17.50

Cobalt, Oxide..... # 100 @ 2.25 @ 2.50

Whiting, Common, # 100 @ 40 @ 60

Whiting, Gliders..... 45 @ 65

Whiting, extra Gliders..... 55 @ 65

Putty.

In bladders..... \$2.25

In bulk..... 1.25

In cans, 1 lb to 5 lb..... 3.25

In cans 12 lb to 25 lb..... 2.25

Spirits Turpentine.

In Southern bbls..... 49 1/2 @ 50

In machine bbls..... 60 @ 50 1/2

Glue.

Cabinet..... 11 1/2 @ 16

Extra White..... 18 @ 23

French..... 13 @ 40

Irish..... 13 1/2 @ 16

Low Grade..... # 9 @ 12

Medium White..... 14 1/2 @ 16 1/2

Animal, Fish and Veget-

table Oils.

Linseed, City, raw..... # gal. 63 @ 64

Linseed, City, boiled..... 65 @ 66

Linseed, State and Western, raw..... 60 @ 63

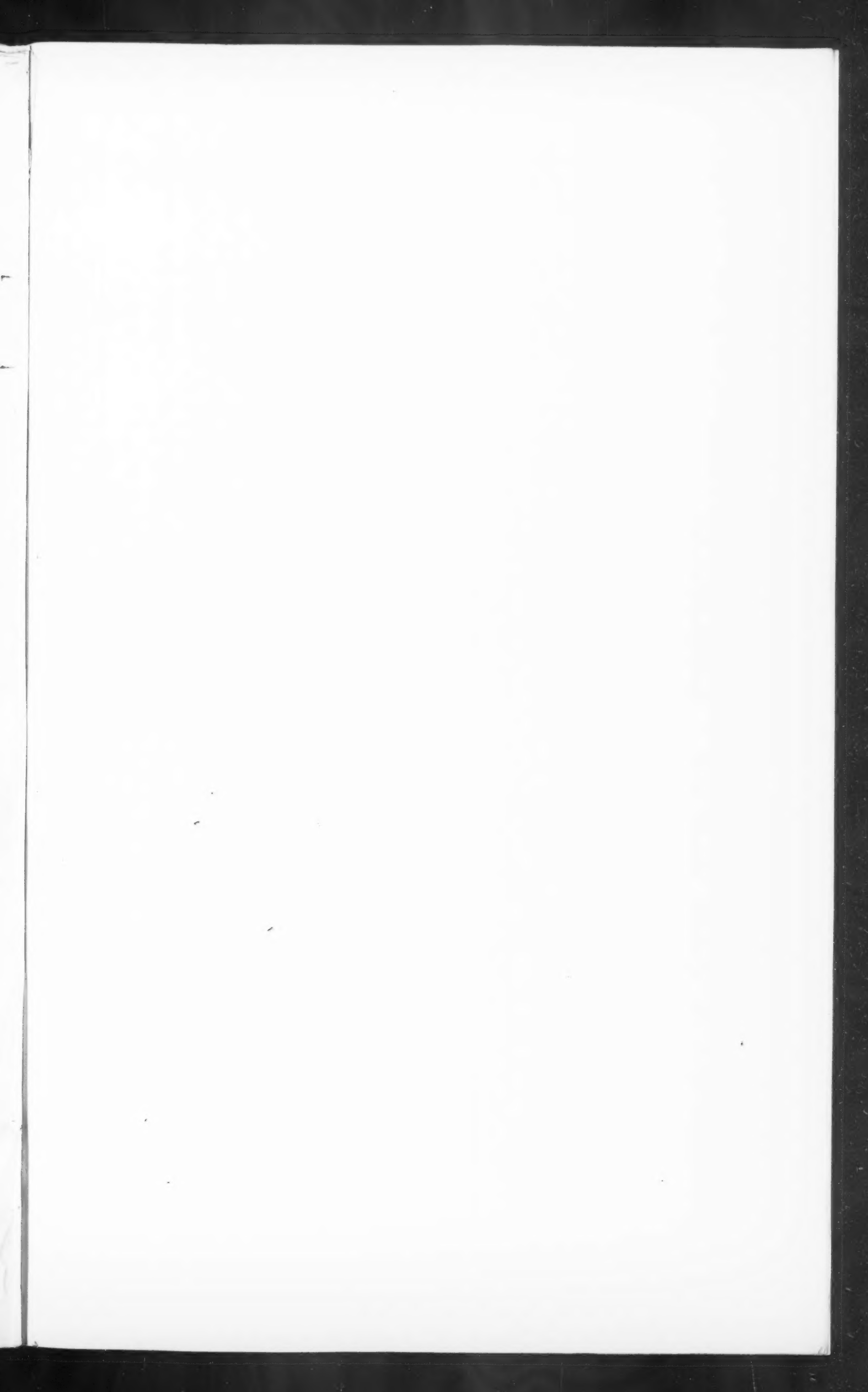
Linseed, raw Calcutta seed..... 85 @ 85

Lard, Prime..... 77 @ 78

Lard, Extra No. 1..... 59 @ 60

Lard, No. 1..... 53 @ 53

Cotton-seed, Crude..... @



VOLUME
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